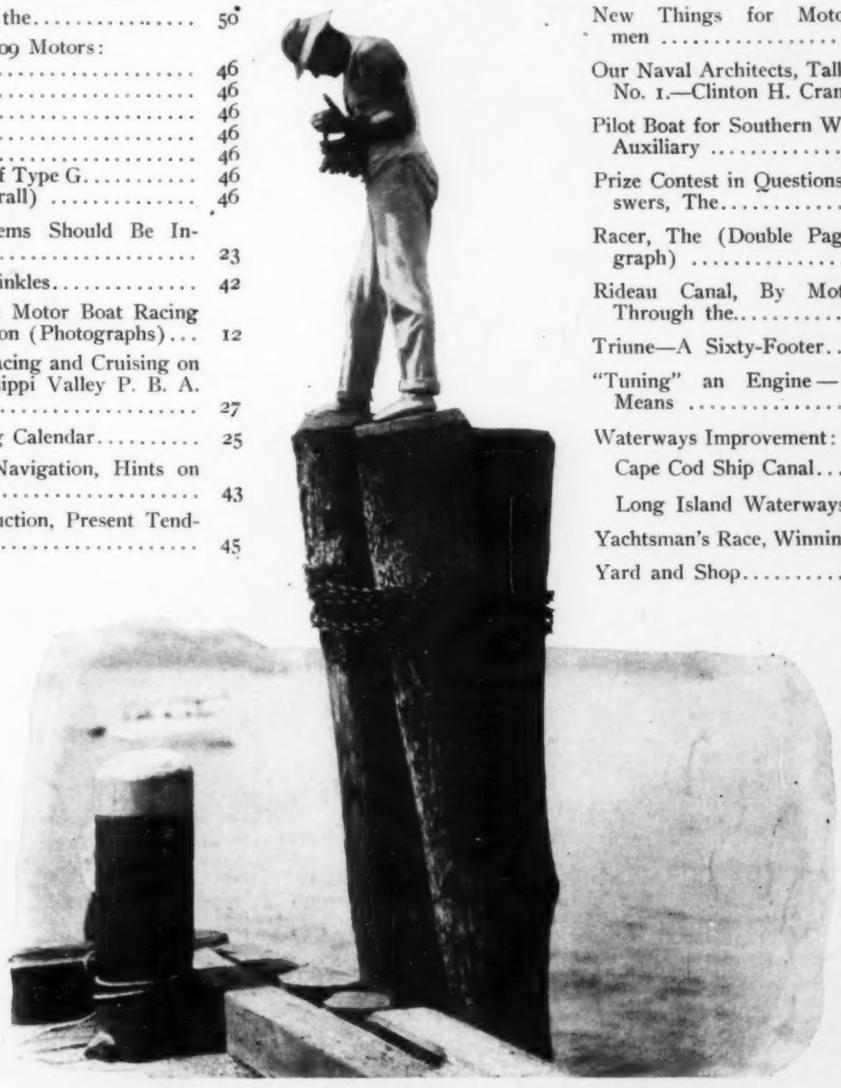
MOTOR BOATING

Contents—August, 1909



The Motor Boatman.—"Snapping" the start of the Marblehead Race.

The National Magazine **MOTOR BOATING** of Motor Boating

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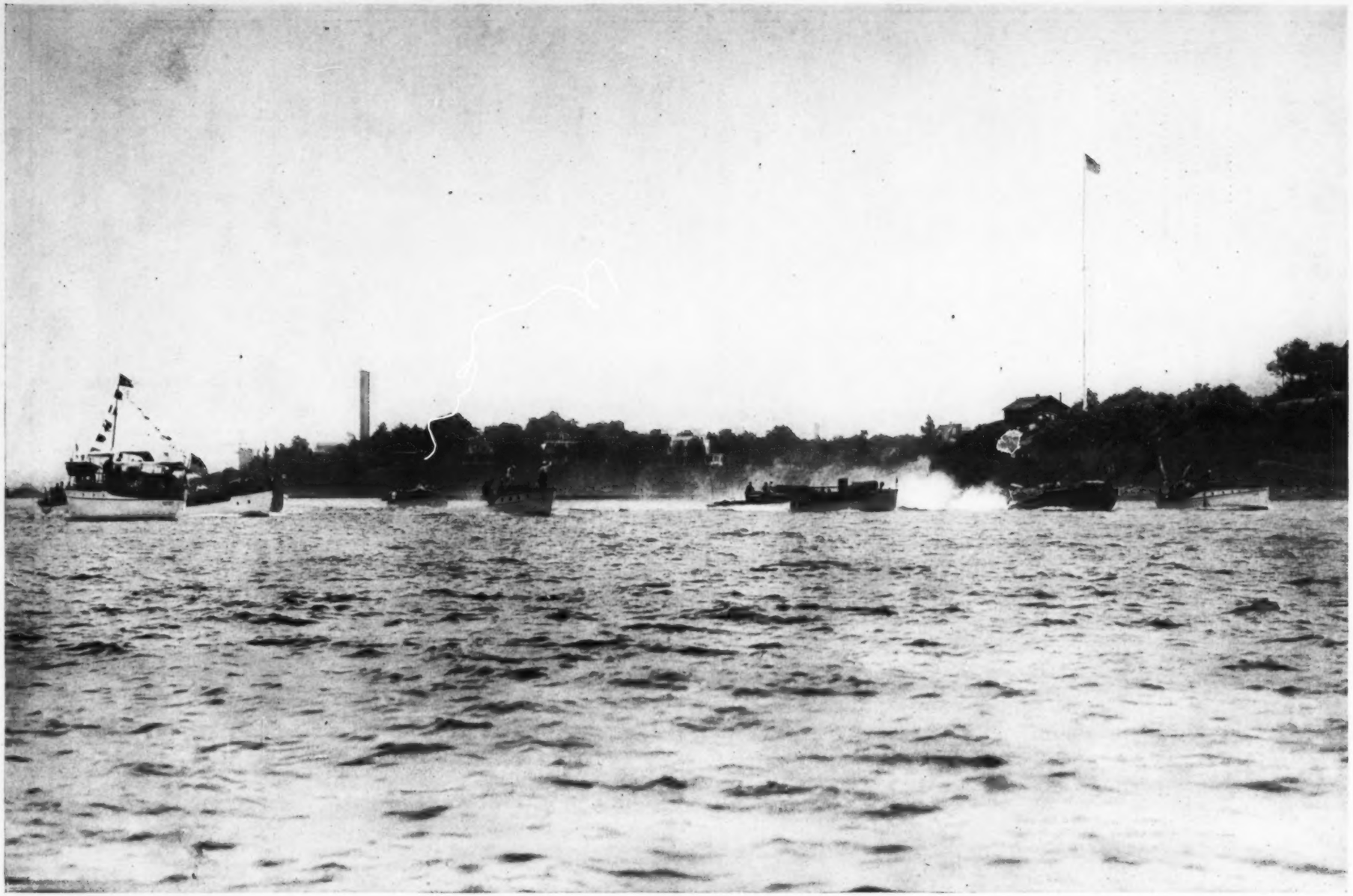


Starting the racers off for Marblehead—an unusually fine start.

MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

The Marblehead Race.

How Elmo II Won on Time Allowance and Josephine Broke a Record. Of the Racers that Rounded the Cape and What Befell Kitcinque.

FOR the first time during the five years that it has been an annual fixture, the motor boat race between New York and Marblehead has resulted in the destruction of one of the competing craft, though fortunately without loss of life. The Kitcinque, a fine new 40-foot cruiser, owned by Frank D. Gheen, of New York City, designed especially for this race, and equipped with an 8-cylinder, 75 h. p. motor, caught fire at midnight while crossing Vineyard Sound, far in the lead of the rest of the fleet, and was completely destroyed. The fire was said to be due to a choking of the gasoline feed pipe, which shut off the supply of fuel to the motor and caused it to back fire, igniting lubricating oil in the bottom of the boat. The crew of six men, including the owner and the designer of the boat, were picked up by a coasting schooner and landed at Vineyard Haven.

At the time of the accident the Kitcinque was so far in the lead and had made up so much of the time that it was compelled to allow the other boats that not only was its victory assured in case it completed the course without accident, but there was also every prospect that the record for the race would be lowered by several hours. As it was, this record of 30 hours and 40 minutes for 270 nautical miles, made by the Hopalong in 1907 was lowered by the Josephine, the first boat to finish in this year's event, which covered the 285 miles between Bay Ridge and Marblehead in 31 hours 56 minutes and 45 seconds, an average speed of 8.9 nautical miles per hour.

There were twelve starters in this year's race, one less than last year, and the same number as in 1905 and 1906, and all but two completed the course. The winner, Elmo II, owned by F. D. Giles, Jr., of New York City, was one of the smallest and lowest powered boats in the fleet, having the lowest rating and the largest time allowance. It was sixth in the actual order of finish, taking 36 hours 27 minutes and 25 seconds to cover the course, but receiving an allowance of 11 hours 7 minutes and 30 seconds, which brought its corrected time down to 25 hours 19 minutes 55 seconds. Its average speed over the entire course was 7.8 nautical miles per hour.

Second place and prize went to the Lizzie L, owned by Charles O. Lailer, of Somerville, Mass., a boat of medium size and power, which was fourth to finish. It covered the course in 33 hours 27 minutes 30 seconds, and received an allowance of 7 hours 37 minutes and 25 seconds, which brought its corrected time down to 25 hours 50 minutes 5 seconds. Irene II, owned by S. W. Granbery, of Newark, N. J., last year's winner, was fifth to finish, and obtained third place, covering the course in 36 hours 14 minutes and 25 seconds, and receiving an allowance of 9 hours 50 minutes 25 seconds, which made its corrected time 26 hours 24 minutes. Sagamore III, of Lynn, was fourth; Kittrois, of New York, fifth; Barbara, of New York, sixth; Josephine, of Boston, seventh; Nimrod, of Amesbury, eighth; Niobe, of New York, ninth, and Square Deal, of Baltimore, tenth. Northerner, of New York, withdrew, and Kitcinque, of New York, was burned, as already mentioned.

The twelve competitors in this year's event formed the most notable fleet in the history of the race. Six of them, Kitcinque, Elmo II, Lizzie L, Josephine, Sagamore III and Nimrod, are cruisers of the most modern type, built especially to enter this race. Three others, Irene II, Kittrois and Barbara are also modern boats, built for last year's event, while the remaining three are wholesome types and well adapted for the contest.

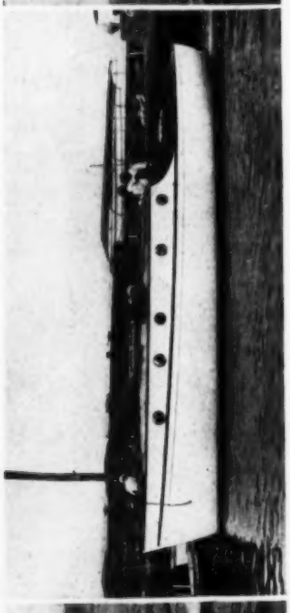
Elmo II, the winning boat, is owned by F. D. Giles, Jr., New York City, and was designed by H. W. Patterson, of the Gas Engine and Power Company, and Charles L Seabury & Co., Consolidated, Morris Heights, New York City. It represents the extreme development of the raised deck type, the sides being carried up flush with the top of the house all the way from the bow to the after cabin bulkhead. The deck is unbroken except for a hatch and skylight. The boat is steered from the cockpit, which is comparatively small and is self-bailing. The length over all is 34 feet 2 inches, and the beam is 8 feet 9 inches. The motor is a 2-cylinder, 4-cycle Standard

The New York to Marblehead Race.

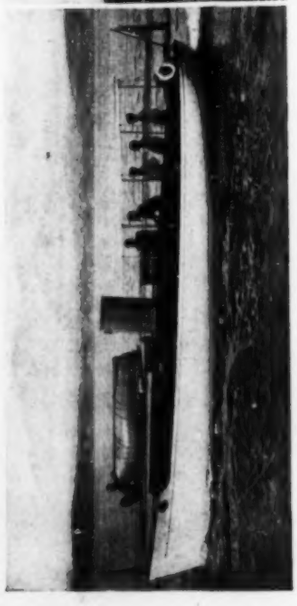
Start, off the Crescent Athletic Club House, Bay Ridge, New York Harbor, 10:35 A. M., July 17.
First Boat Finished in Marblehead Harbor at 6:36 P. M., July 18. *Last Boat Finished* 4:56 A. M., July 19.
Winner, Elmo II, owned by F. D. Giles, Jr., New York City.
Second, Lizzie L, owned by Charles O. Lailer, Somerville, Mass.
Best Actual Time, Josephine, owned by T. J. Flynn, Boston, Mass., 31 hours 56 minutes 45 seconds.
Distance of Race.....285 nautical miles.
Average Speed of Winner, 7.8 nautical miles per hour.
Average Speed of Time Prize Winner, 8.9 nautical miles per hour.
Best Previous Time, 30 hours 40 minutes (270 miles), Hopalong, 1907.
Previous Winners:

1905 ..... Talisman	1907 ..... Picaroon
1906 ..... Sis	1908 ..... Irene II

Barbara (W. M. Duncan, owner.)
L.O.A., 35 ft. 1¼ in. Beam, 9 ft. 10 in. Engine, 4 cyl. 4 cycle Ralaco; bore 4 in., stroke 6 in., r.p.m. 444, rated 11.16 h.p. Rating 29.00.



Elmo II (F. D. Giles, Jr., owner.)
L.O.A., 34 ft. 2 in. Beam, 8 ft. 9 in. Engine, 2 cyl. 4 cycle Standard; bore 6 in., stroke 8 in., r.p.m. 356, rated 13.41 h.p. Rating 28.87.



Josephine (T. J. Flynn, owner.)
L.O.A., 39 ft. 11 in. Beam, 8 ft. Engine, 4 cyl. Jager; bore 5¾ in., stroke 6 in., r.p.m. 650, rated 28.14 h.p. Rating 41.99.

with 6 inches bore and 8 inches stroke, and is rated at 13.41 h. p. at 356 r. p. m. The rating of the boat was 28.87, giving it an allowance of 11 hours 7 minutes 30 seconds.

Lizzie L, which obtained second place, is owned by Charles O. Lailer, of Somerville, Mass., and was designed and built by Britt Brothers, of West Lynn. In design this boat is a combination of the raised deck and trunk cabin type, the forward deck being raised almost to the top of the cabin trunk, and the sides being cut away from the forward end of the house to the stern. A ventilating stack, upon which the whistle is mounted, gives the boat a very yachty appearance. The interior is well lighted and ventilated by ports of ample size, and the boat is a very comfortable cruiser. The length over all is 38 feet 7¾ inches, and the beam 9 feet 3 inches. The motor is a 3-cylinder, 4-cycle Standard with 6 inches bore and 8 inches stroke, and is rated at 20.12 h. p. at 356 r. p. m. The boat is rated at 33.71, and received an allowance of 7 hours 37 minutes 25 seconds.

Irene II, owned by S. W. Granbery, of Newark, N. J., is well known as the winner of the Marblehead race last year, and also as a competitor in the Bermuda race of that year. More recently it figured as the winner of the Capitol to Coast Race from Albany to New York on July 5. This boat was designed by Edson B. Schock, and is a raised deck cruiser of very good type, the sides being carried up flush with the top of the cabin for about half the length, from which point they are cut down to the usual height. A tall signal mast with a yard is carried and gives this boat a very distinctive appearance. The length over all is 59 feet 9¾ inches. and the beam is 10 feet 6 inches. The motor is a 3-cylinder, 4-cycle Standard with 6 inches bore and 8 inches stroke, and rated at 21.03 h. p. at 372 r. p. m. The rating of the boat was 30.52, giving it an allowance of 9 hours 50 minutes 25 seconds.

Sagamore III is owned by L. C. Wade, of Lynn, Mass., and was designed and built by J. E. Graves of Marblehead. It has a raised fore deck extending over about 1-3 of the boat's length and flush with the cabin top. It carries two light masts. The length over all is 7 feet 2 inches, and the beam 8 feet 2 inches. The motor is a 2-cylinder, 2-cycle Sagamore with 7 inches bore and 6½ inches stroke, rated at 18.88 h. p. at 385 r. p. m. The boat was rated at 35.11, giving it an allowance of 6 hours 50 minutes 1 second.

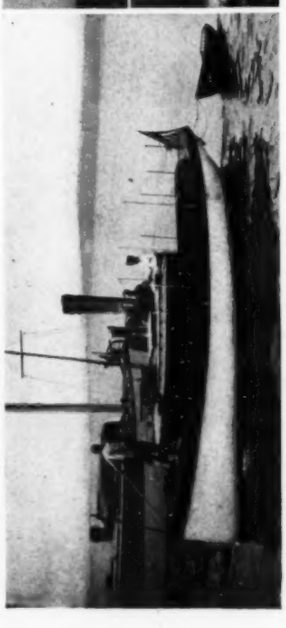
Kittrois is owned by Henry Weisman, of New York City, and was a competitor in the Marblehead race last year, obtaining fifth place, the same position as this year. At that time it was the property of Frank D. Gheen, the owner of the Kitcinque, for whom it was built by the Stamford Motor Company, Stamford, Conn. It also is a raised deck cruiser, though not of the extreme type. The length over all is 38 feet 8 inches, and the beam 9 feet 3 inches. The motor is a 4-cylinder, 4-cycle Campbell, with 5½ inches bore and 6½ inches stroke, rated at 22.75 h. p. at 442 r. p. m. The boat was rated at 31.04, and received an allowance of 9 hours 27 minutes 37 seconds.

Barbara, owned by W. M. Duncan, New York City, was also a competitor in last year's race, and took seventh place. This is a typical trunk cabin cruiser, designed by F. A. Rudolph, and built at the owner's place of business in New York City. The length over all is 35 feet 1¼ inches, and the beam 9 feet 10 inches. The motor is a 4-cylinder, 4-cycle Ralaco with 4 inches bore and 6 inches stroke, rated at 11.16 h.p. at 444 r. p.m. The boat was rated at 29, and received an allowance of 11 hrs., 2 min., 46 secs.

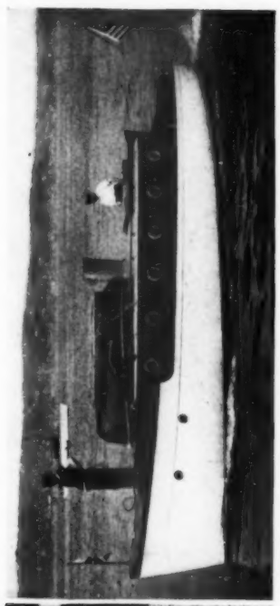
Josephine, owned by T. J. Flynn, of Boston,

Northerner (Chas. H. Randall, owner.)
L.O.A., 36 ft. 4 in. Beam, 8 ft. 7½ in. Engine, 4 cyl. 4 cycle Loxier; bore 5½ in., stroke 6 in., r.p.m. 508, rated 24.14 h.p. Rating 36.86.

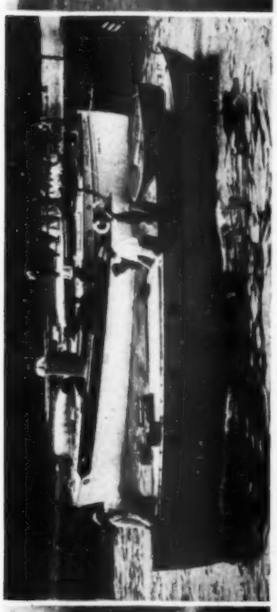
Kitcinque (F. B. Gheen, owner.)
L.O.A., 39 ft. 10 in. Beam, 8 ft. 5 in. Engine 8 cyl. 4 cycle Sterling; bore 5½ in., stroke 6 in., r.p.m 550, rated 52.27 h.p. Rating 52.06.



Niobe (Geo. McMinn, owner.)
L.A.O., 36 ft. 5 in. Beam, 9 ft. 4 in. Engine, 4 cyl. 4 cycle Speedway; bore 4½ in. stroke 5 in., r.p.m. 583, rated 15.35 h.p. Rating 30.24.



Lizzie L (C. O. Lailer, owner.)
L.O.A., 38 ft. 7¾ in. Beam, 9 ft. 3 in. Engine, 3 cyl. 4 cycle Standard; bore 6 in., stroke 8 in., r.p.m. 356, rated 20.12 h.p. Rating 33.71.



Nimrod (Atlantic Co., owner.)
L.O.A., 30 ft. 2 in. Beam, 6 ft. 6 in. Engine, 3 cyl. 2 cycle Atlantic; bore 4¼ in., stroke 4½ in., r.p.m. 741, rated 13.91 h.p. Rating 41.02.

Square Deal (C. J. Smith, owner.)
L.O.A., 31 ft. 9⅝ in. Beam, 8 ft. 10½ in. Engine, 3 cyl. 2 cycle Gray; bore 5¾ in., stroke 5 in., r.p.m. 598, rated 22.83 h.p. Rating 40.43.

Mass., is a new boat this year, designed by Swasey, Raymond & Page, and built by the Fore River Shipbuilding Company, Quincy, Mass. This is one of the most notable boats in the race, and was designed to obtain more speed and more comfortable accommodations than are usually provided in boats of this class without any undue sacrifice of seaworthiness. There is a short raised deck over the fore peak, and next comes the main cabin, lighted with square windows and fitted with wide transom berths. The engine-room is located amidships, lighted by ports and ventilated by a large stack. The length over all is 39 feet 11 inches, and the beam 8 feet. The motor is a 4-cylinder Jager with 5¼ inches bore and 6 inches stroke, rated at 28.14 h. p. at 650 r. p. m. The boat was rated at 41.99, and received an allowance of 2 hours 26 minutes 25 seconds.

Nimrod is owned by the Atlantic Company, Amesbury, Mass., and was designed by Henry J. Gielow. It was the smallest boat in the fleet, and is of the raised deck type. The length over all is 30 feet 2 inches, and the beam 6 feet 6 inches. The motor is a 3-cylinder, 2-cycle Atlantic with 4¼ inches bore and stroke, rated at 31.91 h. p. at 741 r. p. m. The boat was rated at 41.02, and received an allowance of 3 hours 51 minutes 33 seconds.

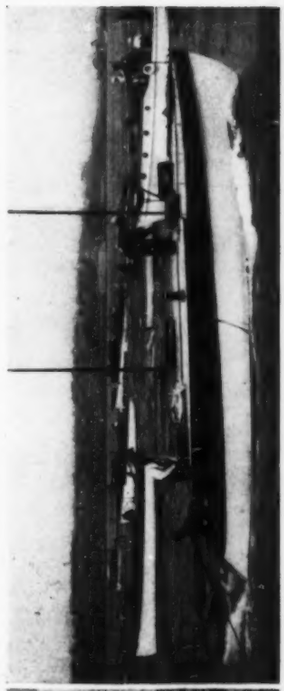
Niobe is owned by George McMinn, of New York City, and is of the regulation trunk cabin type. The length over all is 36 feet 5 inches, and the beam 9 feet 4 inches. The engine is a 4-cylinder, 4-cycle Speedway 4½ inches and 5 inches stroke rated at 15.35 h. p. at 583 r. p. m. The boat was rated at 30.24, and received an allowance of 10 hours 4 minutes 20 seconds.

Square Deal is owned by C. J. Smith, of Baltimore, Md., and is a modified trunk cabin model. Next to the Nimrod it was the smallest boat in the race, being only 31 feet 9⅝ inches over all, and 8 feet beam. The motor is a 3-cylinder, 2-cycle Gray, bore 5¾ inches and stroke 5 inches, rated at 22.83 h. p. at 598 r. p. m. The boat was rated at 40.43, and received an allowance of 4 hours 7 minutes 8 seconds.

Northerner, which withdrew from the race soon after the start, is owned by Clarence D. Randall, of New York, and was built by the Matthews Boat Company, of Port Clinton, Ohio. It is a trunk cabin boat, 36 feet 4 inches over all and 8 feet 7½ inches beam. The motor is a 4-cylinder, 4-cycle Lozier, 5½ inches bore and 6 inches stroke, and rated at 24.14 h. p. at 508 r. p. m. The boat was rated at 36.86, and received an allowance of 5 hours 53 minutes 24 seconds.

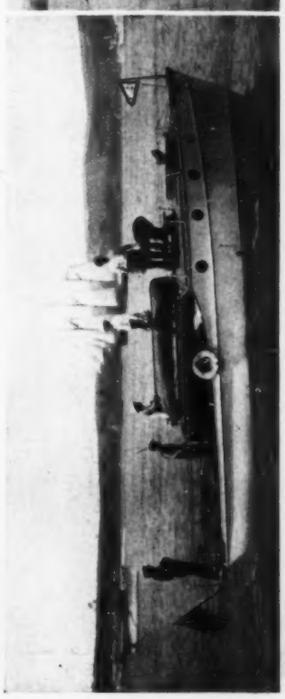
Kitcinque, the unfortunate one, owned by Frank D. Gheen, was designed by M. M. Whitaker, and built at Steinway, N. Y., this year. It was designed as a fast cruiser, having a flaring bow and fine lines. The forward deck was flush, but not raised and there was a trunk cabin of moderate size. The length over all was 39 feet 10 inches, and the beam 8 feet 5 inches. The motor was an 8-cylinder, 4-cycle Sterling with 5½ inches bore and 6 inches stroke, rated at 52.27 h. p. at 550 r. p. m. This high motor rating gave the boat a rating of 52.56, and compelled it to allow time to all the other starters.

The start was off the club house of the Crescent Athletic Club, at Bay Ridge, New York, on Saturday, July 17, and was scheduled for 10 o'clock in the morning, but it was 11.35 before the fleet was finally sent away. The starting line was between Commodore F. M. Wilson's Sumida, the flagship of the club and the club dock. Irene II was first to cross the line, closely followed by



Sagamore III (L. C. Wade, owner.)
L.O.A., 37 ft. 2 in. Beam, 8 ft. 2 in. Engine, 2 cyl. 2 cycle Sagamore; bore 7 in., stroke 6½ in., r.p.m 385, rated 18.88 h.p. Rating 35.11.

Irene II (S. W. Granbery, owner.)
L.O.A., 39 ft. 9¼ in. Beam, 10 ft. 6 in. Engine, 3 cyl. 4 cycle Standard; bore 6 in., stroke 8 in., r.p.m. 372, rated 21.03 h.p. Rating 30.32.



Kittrois (Henry Weisman, owner.)
L.O.A., 38 ft. 8 in. Beam, 9 ft. 3 in. Engine, 4 cyl. 4 cycle Campbell; bore 5⅞ in., stroke 6½ in., r.p.m. 442, rated 22.75 h. p. Rating 31.04.

The Marblehead race—Measurer Haddock at work before the start.

Contestants receiving instructions from the committee before the start.

Kitcinque and then the others followed in a bunch. Kitcinque soon took the lead and was timed at the Ambrose Channel Light at 10.55, Irene II was the last to turn the light at 11.05, having some trouble at this point, while Northerner broke down off Norton's Point and withdrew from the race.

The weather was favorable, and the fleet made good progress during all of Saturday and the greater part of Sunday, but after rounding Capt Cod on Sunday evening, they ran into a heavy thunderstorm, which made it very disagreeable going across Massachusetts Bay.

At Marblehead the committee of the Eastern Yacht Club awaited the finish of the race on Max Agassiz's schooner yacht Kirin, which was anchored just inside the mouth of the harbor. The Josephine was the first boat to finish at 6:36:45 P. M. Then came the Nimrod, at 7:04:30 P. M.; Sagamore III, at 8:06:50 P. M., and Lizzie L, at 8:07:30 P. M. It was thought the latter boat would be the winner on corrected time, until the Elmo II finished at 11:07:25 P. M. Irene II finished at 10:54:25 P. M.; Kittrois at 11:09:20 P. M., and Square Deal at 11:09:25 P. M., while Barbara did not finish until 12:59:02 A. M., and Niobe at 4:56:25 A. M., Monday.

The incoming racers had little to report in the way of incidents, as most of them had run an uneventful course from start to finish. Nimrod had lost more than an hour by putting into Cottage City for gasoline, otherwise it probably would have made the best speed over the course. As it was this little boat covered the course in 32 hours 20 minutes 30 seconds, only 24 minutes more than Josephine, which won the time prize.

Square Deal was the only boat beside the Kitcinque to meet with an accident. The steering gear on this boat parted in the storm which overtook the racers near the finish, and it was necessary to lay to while the necessary repairs were being made. Barbara was unable to find the entrance to Marblehead Harbor until after three hours had been lost in running back and forth between Nahant and Eastern Point.

How Kitcinque Was Lost.

THE NAVIGATOR'S STORY.

"The log of the Kitcinque tells the story of the disaster briefly but graphically," said Walter M. Bieling, the navigator of the unfortunate craft. "Starting at 10:35 A. M., we passed Norton's Point at 10:56, the Rockaway Bell Buoy at 11:19, Fire Island Light Bell Buoy at 1:47, Shinnecock Light at 5:13 P. M., Montauk Light, two miles due north, at 7:47 P. M., Block Island Light at 9 P. M., and at 11:30 P. M., when we were four miles south of Vineyard Light Vessel the fire broke out. At 11:40 P. M. we were sighted on fire by the schooner D. J. Sawyer, Captain C. Hellend, of Fall River, bound from Porto Rico to Boston. At 11:45 the schooner lowered a boat, which required an hour to reach us as the schooner was several miles distant, and at 1:32 A. M. we were safe aboard the schooner.

"Up to the time of the fire everything had gone well, and we should have won easily, for it was after daylight the next morning when we saw seven of the twelve other boats pass through Vineyard Sound. The primary cause of the fire was an obstruction in the gasoline feed pipe. We were using a pressure system, and we put on extra pressure in an effort to force the obstruction through the pipe, but this only resulted in a complete stoppage of the supply with the result that soon afterward the motor backfired through one of the carbureters, and as this was set very close to the floor, the flame ignited some oil in the bilge. We fought the fire with chemical extinguishers and soon had it entirely out, as we supposed, for the interior of the boat was entirely dark. Suddenly it broke out again under the flooring, where we were

lashed forward and put it overboard. The interior of the boat was ablaze by this time, and we were unable to enter it to obtain our clothing or anything else.

"The boat would hold only three of us, so Gheen, Chapman and Greno got in it, while Thurber, Whitaker and I put on life preservers and went overboard. We were in the water an hour before the boat from the schooner reached us. Captain Hellend treated us very kindly and put into Vineyard Haven in order to land us there. We lost sight of the boat about the time we were taken aboard the schooner, and it undoubtedly went to the bottom as the weight of the engine would carry it down."

THE DESIGNER'S STORY.

Some additional details of the loss of the Kitcinque were given by M. M. Whitaker, the designer of the boat and a member of the crew in the race:

"The Kitcinque was designed and built to make a new record in the race, and was of light construction, but amply strong. It had a deep section, being almost a dead-rise model, but not having the sharp bilges of the latter type of boat. This form made the boat easy to drive and a fine sea boat. The motor was a special 8-cylinder, 4-cycle Sterling, made by the Sterling Engine Company, Buffalo, N. Y., and rating at about 52 h. p. It had been running perfectly from the very start, and there had been no occasion to find fault with either boat or motor up to the time of the accident.

"The fire broke out at about 11:20 P. M., when we were five or six miles from land. The cause was a backfire from the carbureter which caused a blaze around the engine. This was put out, as we supposed, by the use of the fire extinguishers which we had aboard, but after we had thought the trouble was over the fire broke out again, coming up through the floor. This could not have been caused by gasoline in the bilge, as we had turned off the gasoline supply near the tanks to obviate any danger from that source when the fire first started, and we had not noticed any smell of gasoline at any time. The tanks were of seamless steel, and there was no possibility of any leak from them. The only thing which could have spread the fire so quickly in the boat was lubricating oil floating in the bilge, and there may have been a good deal of this, for I had been cleaning out the base of the engine and throwing the oil into the bilge."

Frank D. Gheen, the owner of the Kitcinque, took the loss of his boat in a most sportsmanlike fashion, being seemingly more concerned over the loss of the race. "The Kitcinque," he said, "was a boat of new type, designed as a light weight, seaworthy cruiser, and had come up to our expectations in every respect. We started with an allowance of 11 hours to some of the other boats in the race, and had made up this time at the time the accident occurred."

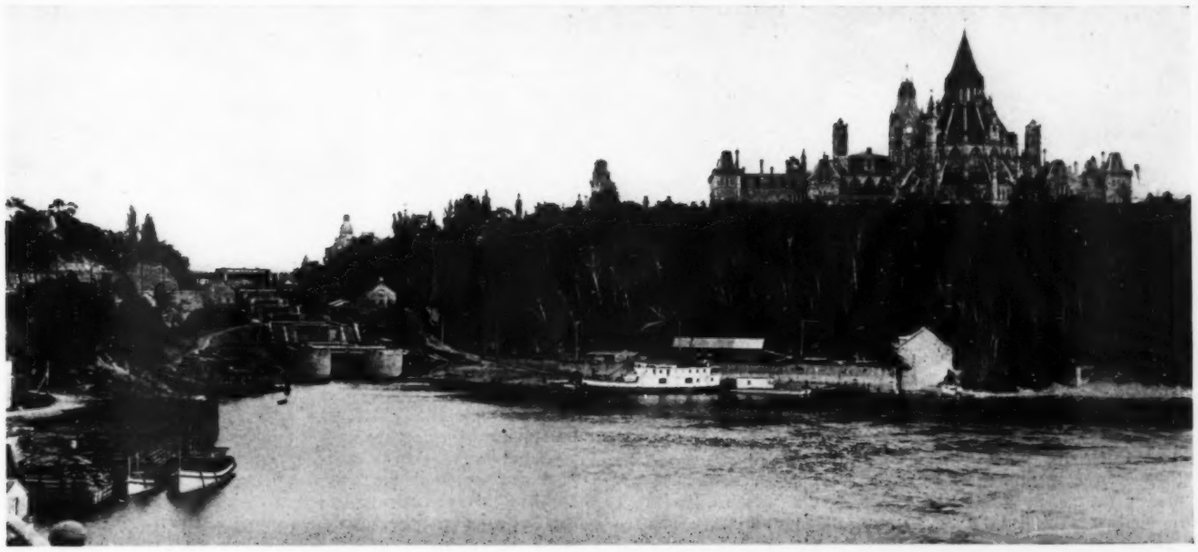
"After the fire had burned for some time it probably created sufficient pressure in the gasoline tanks to blow the caps off, for we could see the gasoline spout up and burn. It spread on the water around the boat and we had hard work to get out of it and keep the dinghy afloat. We made slow progress by paddling for about an hour and a half before we were picked up by the schooner. We did not feel that we were in any great danger, for we did not lose our nerve and the sea was fairly smooth. We had a compass, matches, water and some provisions in the dinghy and were sure to be picked up sooner or later. One large steamer which we were sure was a freighter, because it showed so few lights, passed close to us, but paid no attention to our calls for assistance, although those on board must have seen our plight, as the burning boat lit up the water all about us."

The Marblehead Race in a Nutshell.

Boat and Owner.	Designer.	Builder.	L.O.A. Ft. In.	Beam. Ft. In.	Motor and Rated H.P.	Rating.	Allowance. H.M.S.	Finish.	Elapsed Time. H.M.S.	Correct. Time. H.M.S.	Position.
Elmo II (F. D. Giles, Jr.)	H. W. Patterson	Thos. E. Broadway	34.2	8.9½	Standard 13.41	28.871	11.07.30	11.07.25*	36.32.25	25.24.55	1
Lizzie L. (C. O. Lailer)	Britt Bros.	Britt Bros.	38.7¾	9.3	Standard 20.12	33.708	7.37.25	8.07.30*	33.32.30	25.55.05	2
Irene II (S. W. Granbery)	E. B. Schock	A. D. McDonald	39.9¾	10.6	Standard 21.03	30.519	9.50.25	10.54.25*	36.19.25	26.29.00	3
Sagamore III (L. C. Wade)	J. E. Graves	J. E. Graves	37.2	8.2	Sagamore 18.88	35.112	6.50.01	8.06.50*	33.31.50	26.41.49	4
Kittrois (Henry Weismann)	Whittelsey & Whitaker	Stamford Motor Co.	38.7	9	Campbell 22.75	31.043	9.27.37	11.09.20*	36.34.20	27.06.43	5
Barbara (W. M. Duncan)	F. A. Rudolph	Owner	35	8.2	Ralaco 11.16	29.000	11.02.46	12.59.02†	38.24.02	27.21.16	6
Josephine (T. J. Flynn)	Swasey, Raymond & Page	Fore Riv. Shipbldg. Co.	40	8	Jager 28.14	41.918	3.26.25	6.36.45*	32.01.45	28.35.20	7
Nimrod (Atlantic Co.)	H. J. Gielow	The Atlantic Co.	30.2	6.6	Atlantic 13.91	41.023	3.51.33	7.04.30*	32.29.30	28.37.57	8
Niobe (Geo. McMinn)	Walter Zaunmiller	Walter Zaunmiller	36.5	9.4	Speedway 15.35	30.224	10.04.20	4.56.25†	42.21.25	32.17.03	9
Square Deal (C. J. Smith)	C. J. Smith	Detroit L. & P. Co.	31.9½	8.10½	Gray 22.83	40.433	4.07.08	11.09.21*	36.34.21	32.27.13	10
Kitcinque (F. D. Gheen)	M. M. Whitaker	Kraft & Fountain	39.11	8.4	Sterling 52.27	52.66	.....	Did not finish.			
Northerner (C. H. Randall)	J. H. Wells	Matthews Boat Co.	36.3	8.2	Lozier 24.14	36.86	5.53.24	Did not finish.			

*Sunday, July 18th, P. M. †Monday, July 19th, A. M.

Kitcinque, the fated.—The boat that was built to win the race with horsepower.



Ottawa—The Parliament Buildings and the entrance locks of the Rideau Canal.

By Motor Boat Through The Rideau.

A Hundred Miles of Canal, Lake and River Navigation with Unsurpassed Scenery. From Kingston on Lake Ontario to the Capital of Canada.

By R. J. Suits.

ONE of the most famous waterways on the American continent is the Rideau route, between Kingston on Lake Ontario and Ottawa, on the Ottawa River, which combines 126 miles of canal, lake and river navigation with an unsurpassed diversity and beauty of scenery. Originally built for military purposes, in order to provide a water route between Kingston, Ottawa and Montreal, which should be less open to attack and easier to defend than the St. Lawrence, its deserted block houses are falling into decay and its principal traffic is that of pleasure boats, many of which come from the southward of the international boundary. Its beginning at Kingston is at the very entrance to the Thousand Islands, and no motor boat cruise to the latter region is complete without a side trip through the Rideau Canal.

There is so much of interest in Kingston, one of the oldest cities in the Dominion, that no one should pass through without making a tour of the city. Old Fort Frontenac, erected in 1673; Fort Henry, which occupies a commanding position on a bluff at the right of the harbor; the Martello Towers and old Fort Rooney Block House, erected in 1812, are objects of more than average importance. Having finished your tour of inspection, prepare for an early start over one of the most delightful inland waterways—the picturesque Rideau River route.

Promptly at six o'clock in the morning, command is given to "cast off," and as our vessel leaves the dock and passes the draw-bridge, which spans the Cataraqui River, the real journey is begun.

Only second to the remarkable scenic beauty of the territory adjacent to the canal is its historical importance. A student of history will have no difficulty in determining the causes which led the British Government to connect by artificial means, the lakes and rivers extending for a distance of 126 miles between Kingston on the south and Ottawa on the north, which, when completed, was designated as the Rideau Canal.

First considered in 1812, the subject was referred to various commissions and committees from time to time, until 1826, when the actual work of construction was begun by Colonel By, under the direction of the Imperial Government, and upon the completion of the undertaking, in 1832, it was considered the greatest engineering feat of the age.

Leaving Kingston in the distance and entering a narrow gorge with rugged rocky bluffs towering to a great height on either side of the channel we reach Kingston Mills, and here we encounter the first series of locks which it will be necessary to pass before we reach the head waters of the Cataraqui River. The time required in passing the four locks is about forty minutes, and when we have passed the fourth lock and are ready to resume our journey, we find we have been elevated about fifty feet. Looking back into the gorge below, a panorama, which for scenic beauty is seldom equaled and never excelled, is presented.

On the right may be seen the ruins of the first grist mill erected in this section. Built early in the nineteenth century, it served its purpose for many years until on August 12, 1907, the hand of time and the work of the elements caused it to crumble and fall into the gorge below.

The moment we leave Kingston Mills, signs of the activities of civilization disappear entirely, and we may be said to be in close communion with nature. At Brewers Channel, lake navigation proper begins, and from the time we leave the river until we reach a small hamlet on Seeley's Bay, only occasional signs of habitation are visible.

The eye becomes confused with the ever changing grandeur of nature. Gleams of sunlight at times penetrate the verdant arcades which overshadow us and give to the waters of the lake the appearance of liquid gold. No one but an experienced pilot could find his way in and out of the delusive bays and inlets, with which the shores are indented. Here headlands, there rugged bluffs covered with luxuriant foliage would seem to prevent farther passage, but the man at the wheel is equal to the occasion.

As the locks open to the river.

The first of the chain of lakes over which our journey takes us is Cranberry Lake. No artificial means could in any way add to the lavishness of nature in her setting here. Countless islands, most of which are thickly wooded, rise in solitude from its waters.

Winding in and out of more artificial channel we soon pass into Whitefish Lake, and a diversified scenery is presented.

Running on a mirror-like surface.

Unless attention is called to it, the average traveler will overlook Morton Channel, which leads into Morton Bay, at the base of which is a towering mass of solid rock, designated as "Rock Dunder."

Whitefish Lake is considered the equal of any from the scenic point of view, and is famed as one of the favorite fishing grounds in Ontario. It is the home of many of the game fish, with which Canadian waters abound. It is no uncommon thing for persons who delight in the pastime derived through the medium of the rod and reel to return here year after year, and he is indeed a poor fisherman who returns empty handed from a fishing pilgrimage in these waters.

By noon we have reached Jones Falls, conceded by many to be the most romantic spot on the entire journey. It was this that Princess Louise, who made the tour in 1860, declared to be the most beautiful spot she had ever visited, and that declaration is well sustained by present day visitors.

It was at this point that the greatest difficulty was experienced in the entire undertaking. A sheer descent of over eighty feet made the construction of four locks necessary, and in order to hold back the waters of Sand Lake, an immense horse shoe dam was built. This gigantic structure, the largest of its kind in the world at the time of its completion, is four hundred feet long, three hundred feet through at its base, one hundred feet through at the top, and about ninety feet high.

The excavation through solid rock made necessary for the locks furnished some material for the construction of the dam, but most of the granite blocks, six feet long by four feet wide and of varying thickness, were quarried at a small town called Elgin, about six miles east of Jones Falls.

Erected more than eighty years ago, the dam stands to-day a solid bulwark against the ravages of time, and the forces of nature, a monument to the honor and integrity of those who built it, and gives evidence of being able to endure for many years unless shaken by volcanic forces. Here also an excellent opportunity is afforded to inspect the locks and mechanical devices by which they are operated.

From the opening of navigation, on May 29, 1832, when the steamer Pumper made the initial trip, until 1854, when this strategic waterway was turned over to the Dominion Government, these locks were manned by British soldiers who made their homes in the block houses erected at points of vantage along the route. Many of these block houses are still standing, although most of them are uninhabited. Modern cottages have taken their places, and all warlike preparations have disappeared.

Many of the men employed in operating the canal are the direct descendants of the sappers and miners who assisted in the construction of the undertaking and who settled at various points along the route at the time of its completion.

Boats of all kinds and sizes pass through the canal, and the canoeist with his frail craft, commands as much attention as does the Government boat Loretto, in charge of Superintendent Phillips, and is locked either up or down with the utmost willingness. For many years tolls were charged on all vessels passing through the canal, but in 1906 an order in Council was adopted, whereby tolls were permanently discontinued from all canals in the Dominion.

The story of this ancient waterway would not be complete, and the tourist's pleasure would be robbed of an element of enjoyment were it not possible to relate that during the years that have intervened, the conditions which inspired its construction never arose, that it was never found necessary to use it for warlike purposes, and thanks to the more than neighborly feeling which exists between our people and our Canadian cousins, a large majority of the visitors who find both health and pleasure along this old military highway to-day, are the offspring of those, against whose possible encroachment, it was built as a protection.

"Its block houses are falling into decay."

Rideau Falls at Ottawa.

But we may not remain at Jones Falls indefinitely. There are other sights and other scenes to be enjoyed, and if we have been lavish in our description of the journey thus far, how are we to depict the wondrous beauty that lies before. Bidding adieu to the many friends we have met and made during our sojourn here, we once more journey northward. As we leave the upper lock at Jones Falls, we enter Sand Lake, sailing due west the entire length of this sheet of water until we reach Lake Opinicon.

As we progress we notice that the surrounding country gives evidences of more life and activity, and while many beautiful summer cottages dot the shores of the lakes here and there, the so-called "summer hotel" with its aggregation of wealth and fashion so objectionable and detrimental to the enjoyment of some, is totally lacking, though this does not imply that hotel accommodations of a high order cannot be obtained by individuals possessed of the average income.

We are still on the upward grade and are quickly conveyed through Indian and Clear lakes, until Newboro Lake is reached, and as we pass another lock with an elevation of nine feet, we are told that we have arrived at the "divide," or highest elevation on the journey. We have passed through fourteen locks with a total elevation of one hundred and sixty-five feet above the level of Lake Ontario, and find the waters flowing north towards the Ottawa River and south into the stately St. Lawrence.

Manifestations of the enjoyment of the season are everywhere at hand. At many points of vantage along the shores are indicated the pleasures of camp life. Here and there parties have engaged cottages for the season, and everywhere contentment reigns supreme. Canoes, sail-boats and motor boats, with an occasional steamer, dot the surface of the water everywhere.

Passing from the higher to the lower level, or from Little Rideau Lake into Big Rideau Lake, we find that in addition to being the largest single body of water on the whole chain, it is in many respects the most charming. It contains nearly nearly two hundred islands, many of which are occupied by summer cottages. Islands which some years ago sold for five dollars each, are now held at fancy figures and are hard to obtain. Several New Yorkers have summer cottages here, which indicates that the section is not inaccessible.

After calling at the village of Portland and at an island known at Garret's Rest, we continue northward, and in the early evening reach the enterprising town of Smith's Falls, which is located just midway between Kingston and Ottawa, and which is a good place to stop over night when cruising through the canal.

If weather conditions are favorable, we may be treated to one of the most gorgeous sunsets conceivable. Then, when the sun's rays have disappeared behind the horizon, lights begin to flicker like fire-flies in the cottages on every hand. Perhaps a greater fascination may be lent to the occasion by some cottagers who, in their attempts to outdo nature, have set fire to balsam boughs.

Soon you will be conscious of a transformation gradually taking place, and you muse in the quiet revery of a silvery moonlight flooding everything with its fleeting shadows. The artist is not yet

born who could produce more than faint imitations of nature's loveliness, which you have here been permitted to enjoy.

Resuming our journey, three miles farther on, we reach the actual head of the Rideau River, the waters of which flow north towards the Ottawa and which drains an area of over fifteen hundred square miles. From Smith's Falls to Ottawa it is necessary to pass through thirty-three locks and some artificial channels before being lowered into the Ottawa River, and the course is almost entirely over the Rideau River, but it is little less attractive than cruising on the lakes and among the islands which we have left behind.

The government boat locking through.

On reaching Ottawa, you may disembark at the Government Dock before passing through the eight contiguous locks which lower your boat to the level of the Ottawa River. A splendid opportunity is thus afforded to inspect these locks, the corner stone of which was laid by Sir John Franklin on September 21, 1826.

Passing under the Dufferin and Sapper bridges, which form an acute angle at the southern entrance to Major Hill Park, an excellent view can also be had of the Royal Alexandra or Interprovincial Bridge which spans the Ottawa at this point, connecting the cities of Ottawa and Hull.

It was here that Colonel By began his operations, and for a long time the engineers in charge of the work had their barracks, which they themselves erected, located on the bluff where now are to be seen the Parliament buildings. The laborers employed settled on land nearby and named the place Bytown, in honor of Colonel By.

About a mile east of the gorge at the base of Parliament Hill, the Rideau River, divided by a narrow strip of land, empties its waters into the Ottawa, falling over an abrupt bluff forty-five feet high, forming two of the most beautiful waterfalls imaginable.

About an equal distance west of Parliament Hill will be found the Chaudiere Falls, nearly six hundred feet long and forty-five feet high, over which the water pours in tremendous volume into what is termed the "Big Kittle," furnishing hundreds of thousands of horse-power for operating the gigantic saw-mills, brick and tile works, flour and other mills, which are located along the banks of the Ottawa for miles.

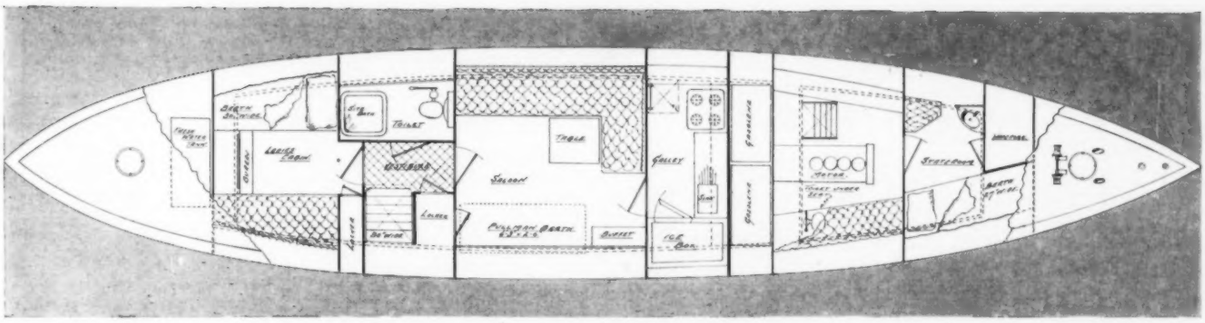
Nature certainly was lavish in her endowment to this particular section of Canada, for in no other part of the civilized world can more appropriate surroundings be found on which to erect public buildings. Located one hundred and twenty-five feet

(*Continued on page* 54.)

Map showing the Rideau navigation from Kingston to Ottawa.

Long distance motor boat racing on the Hudson.

The Nomad II was second in the Albany to New York race, the Martha won the New York-Albany-New York contest, and the Irene II won in the race from Albany to New York. A view at the start of the race from New York to Albany and return is shown in the lower photograph. See summary of results on page 50.



Accommodation plan of Triune—"A yacht cut down in size."

Triune—a Sixty-Footer.

PROBABLY no other sixty-footer which has so far been turned out commands the same amount of attention and is so favorably commented upon as Commodore M. M. Houck's motor boat, or, rather, yacht Triune, for while this craft is only 60 feet long, her very unusual and magnificent interior arrangement and finish makes any term but yacht sound out of place.

In the building of this craft, it was determined after the proper dimensions had been decided upon, to lay out the arrangement on the plan of a large yacht, though on a smaller but practical scale. In other words, the boat was to be a yacht cut down in size rather than the usually found overgrown launch. How well her designer and builders, The Luders Marine Construction Company, of Port Chester, N. Y., have succeeded in this respect may be best judged from the accompanying plans and photographs.

This boat has a beam of 11½ feet and a draft of 4 feet. The sections of the body plan are extremely easy with the idea of getting a boat which would not have too great initial stability, and would be a slow roller. This particular feature was given a great deal of thought, as there had been talk of entering the boat in the Bermuda race.

The ends of the Triune are rather deep and sharp and proved their worth on a recent trip across from New London to Block Island in a very nasty blow. The Triune made the trip when several very much larger craft which essayed the task were forced to return.

A very unusual feature of this boat, and one which appeals strongly to the experienced yachtsmen, is the thorough sub-division by water tight bulkheads. There are three of these, double thickness diagonal planked with canvas between, dividing the boat into four compartments, any two of which may be entered by water, and the balance of the undamaged structure will keep the boat afloat. In consequence of this subdivision the crew, engine and gasoline are absolutely cut off from the owner's quarters, including the galley. The greatest hardship that the plan entails is the carrying of the crew's meals forward, and this is, of course, insignificant when weighed against the many advantages.

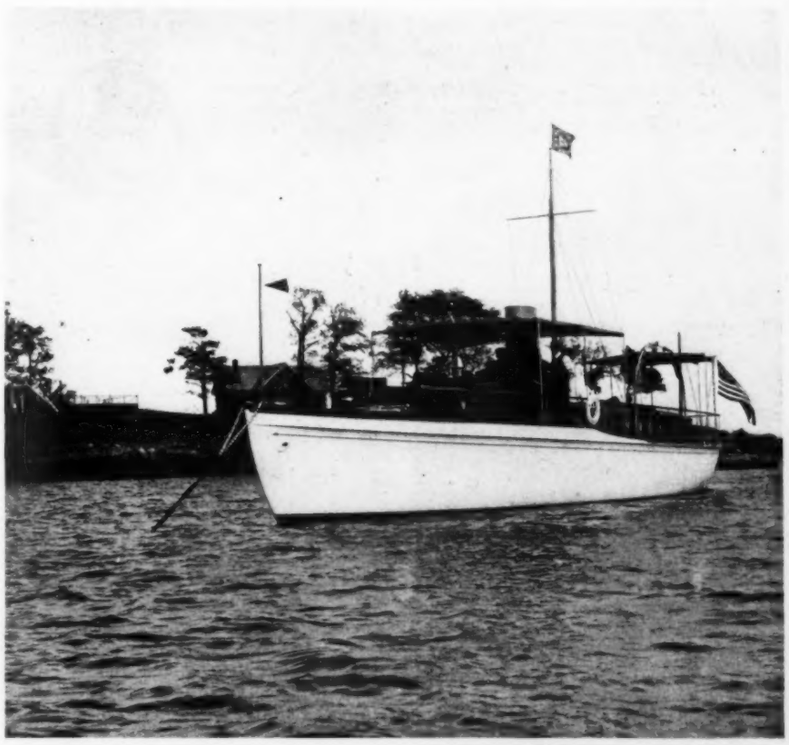
On deck there is a passage nearly two feet wide, guarded by a mahogany rail that extends around most of the boat, connecting the spacious quarter deck with the even more commodious bridge. On the forward deck is located a large observation seat extending across the deck house; there is ample room here for several chairs without interfering with the helmsman.

The engine-room is entered from the bridge deck through a companionway on the port side. In this compartment is housed a 4-cylinder, 4-cycle, 50 h. p. Jencick motor running at 550 revolutions. The cylinders of this machine are 7½ inches diameter by 7½ inches stroke, the ignition is a double system jump spark with a Bosch magneto. The engine is entirely controlled from either the engine-room or bridge, and these controls are so practical that one man alone has frequently brought the boat down the Sound to her home port of New Rochelle.

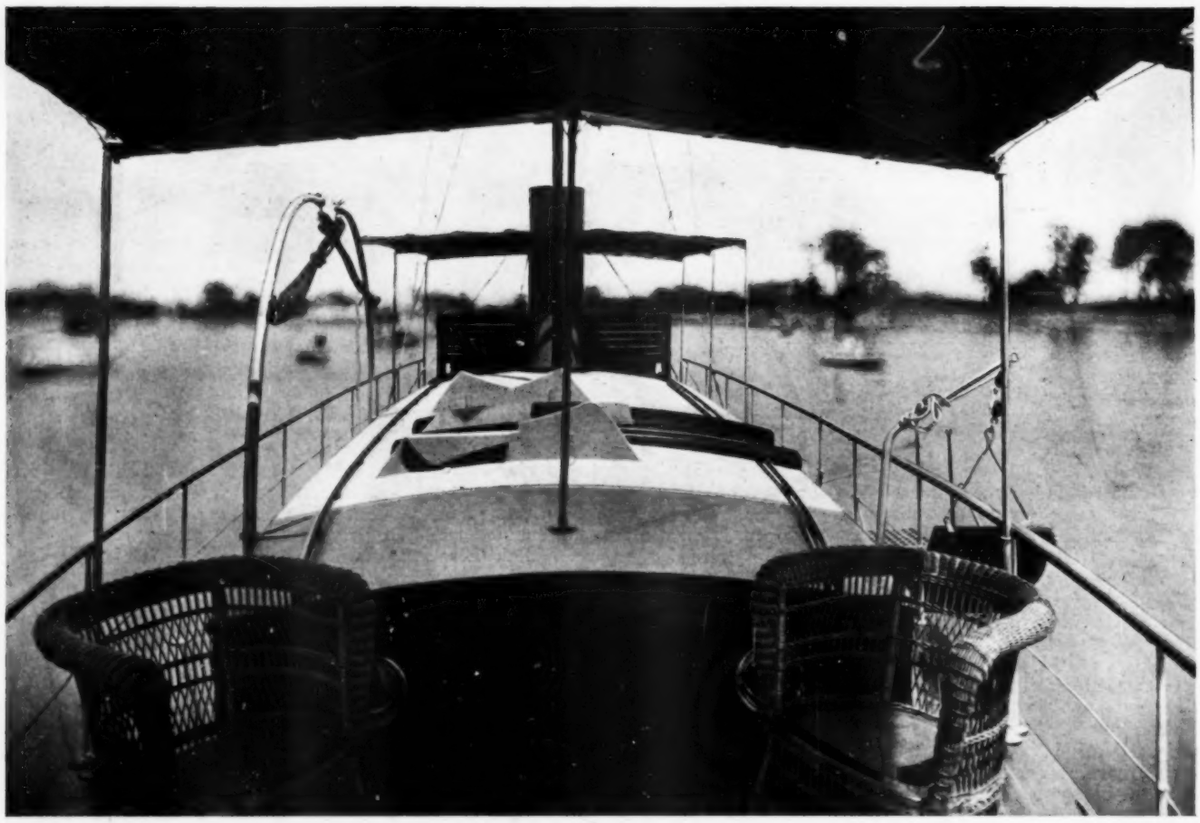
At the forward end of the engine-room there is a switchboard, 18 by 24 inches, controlling the charging and lighting of the batteries and lamps. The electric equipment is most complete, with 20 volt Tungsten lamps that light the boat with dazzling brilliancy. The generator is driven by belt from the flywheel, the batteries, 11 in number, are stored under the floor forward.

A most pleasing feature of the engine-room is the color scheme, a dado of dark green oak with white walls and ceiling above. There is a large work bench on the port side and a transom and toilet-room to starboard. Forward of the engine-room is the skipper's room with a large fixed bunk locker and porcelain wash basin.

The owner's quarters are entered from the side of the after house just aft of the accommodation ladder. Coming down



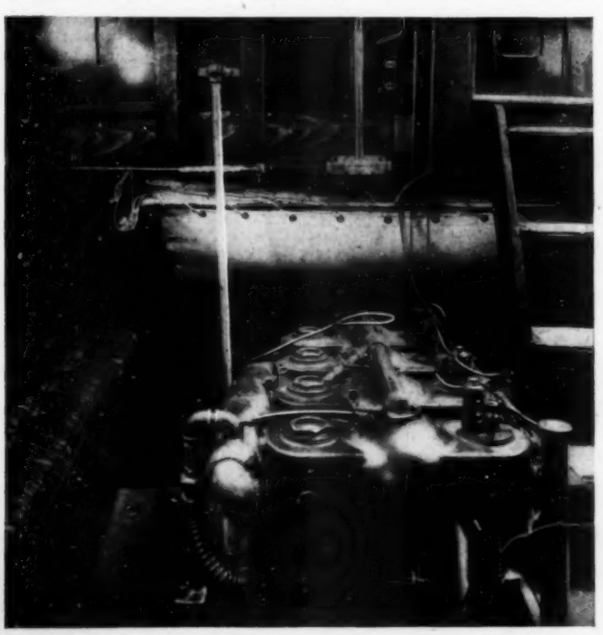
Triune—"Her unusual and magnificent interior arrangement and finish make any term but yacht sound out of place."



On the after deck of Triune, looking forward.

the companion stairway we enter the vestibule where wet garments may be shed before entering the main saloon. There is a large wardrobe on one side of vestibule with a bathroom on the other. The bathroom is fitted with a sitz tub, supplied with fresh water from a tank, which has proved extremely practical.

Aft of the vestibule is the owner's stateroom which, on account of the extreme daintiness of the finish, has been dubbed the "bridal chamber." This room, as are all the quarters aft, is finished in a dead flat white relieved by mahogany trimmings and mahogany beams. This combination gives a very cool and restful effect. The upholstery of this room is old rose, carpet, cushions and curtains all being of this color. On the starboard side is a double bed and a wide sofa berth; to port there is the necessary wardrobe at the forward end of the room and a bureau with bevel plate mirror at the other.



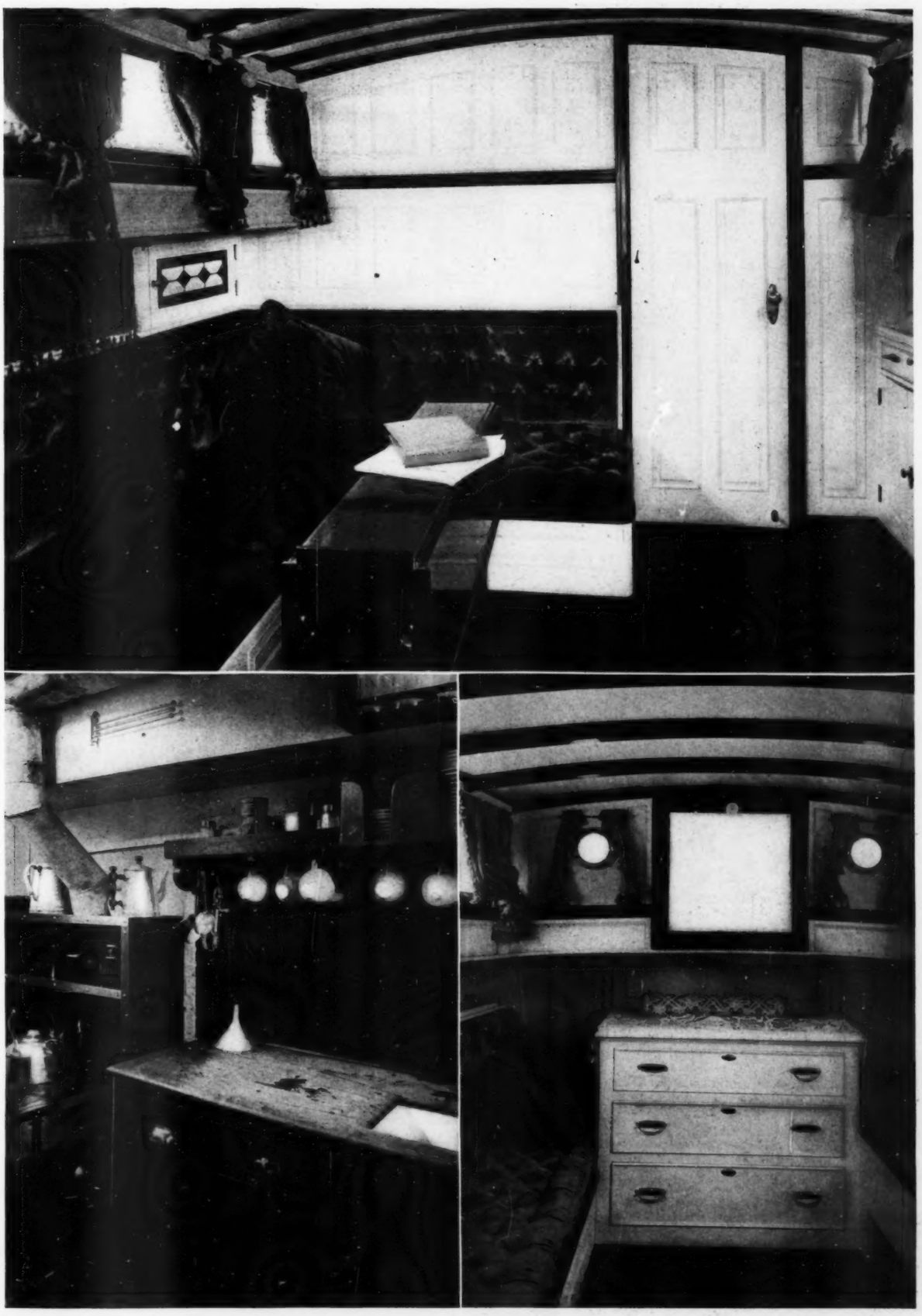
A corner of the engine room. The motor is a 50 h. p. Jencick.

Forward of the vestibule is the main saloon, which is entered through double doors. There is a large sofa berth of L shape to form a cozy corner on the port side with alcoves and a locker with leaded glass doors over. These seats can be extended to a width of 30 inches for sleeping purposes and have large stowage space under. On the opposite side of the room is a Pullman berth, 36 inches wide, concealed in the panel work. The small buffet at the forward end of the cabin is of ample size for the storage of silver and wines. A small bevel plate mirror over the buffet makes a very pleasing finish to this corner. The upholstery of the saloon is in sea green; dark green Wilton carpet, a lighter shade of silk velour cushions and still lighter curtains. The electric fixtures, with their frosted bulbs, were especially designed for the boat.

The galley is forward of the main saloon and extends across the boat; it is fitted with an ice box of exceptional size, holding 500 lbs. of ice. There is an ice-water tank in the refrigerator, which has proven to be a great convenience. The stove is a regular French range, complete with hot water back and plate warming rack, and is arranged to burn coal, wood or charcoal. In addition there is an alcohol stove for use in hot weather or when there is not time or inclination to start the range. This room is trimmed with a dado of chestnut stained dark green with white above and on the ceiling and mahogany beams. The galley is a special feature of the boat, is perfect in all its appointments, and above all, is of ample size and well ventilated. The smoke from the stove is carried up through the main smoke stack, and there is a hatch to port for the use of the cook, so that he need not pass through the saloon.

The gasoline tanks, of 48 oz. copper, have a capacity of two hundred gallons and a gravity feed. The fresh water tank has a capacity of 150 gallons. The extra large size of these tanks will easily permit of a run of over 300 miles without refilling.

On the trial trip, recently conducted over the Government measured mile at Hempstead, a speed of 11½ miles was obtained with 550 revolutions. The engine is unusually quiet, and on account of its excellence and the extremely substantial engine beds, vibration is practically eliminated.



Triune—Interior views showing main saloon, galley and owner's stateroom.

The upper illustration shows the main saloon, looking forward. The table shown is portable and may be placed in any part of the room or removed altogether. The door in the corner leads to the galley, which is shown in part in one of the lower pictures. This is a good sized and well arranged room, which could not be well photographed on account of its shape. The other lower illustration shows the owner's stateroom, a very attractive and comfortable compartment.

Regarding Waterways Improvement.

Long Island Waterways.

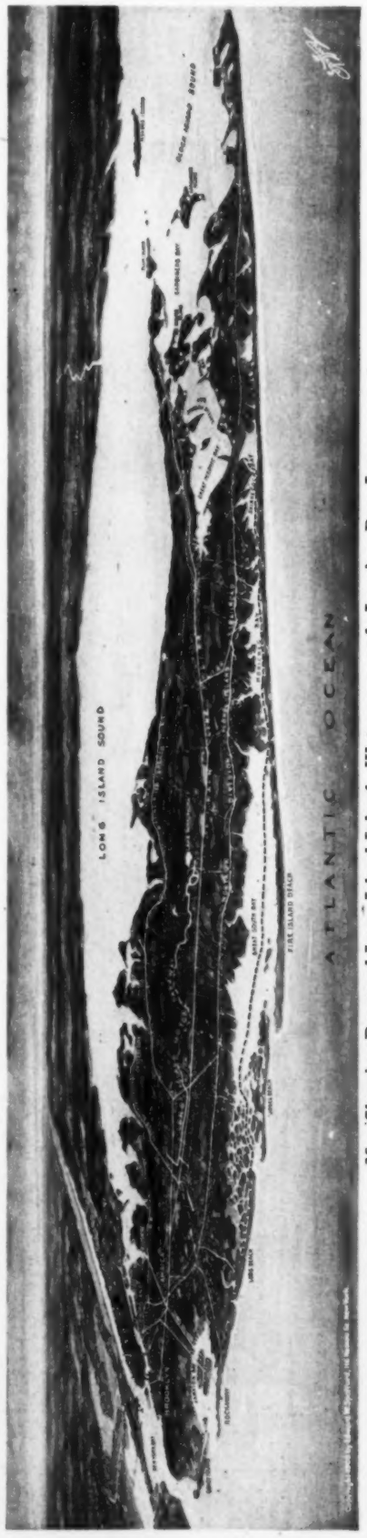
THE widespread demand for improved facilities for water transportation should be of great interest to motor boatmen, as the movement is destined to result in the creation of a number of new waterways, all which will be available for motor craft and which will add greatly to the pleasure and safety of cruising. Plans for the systematic improvement of the principal navigable rivers of the country by the National Government are under way and much has already been accomplished on the Mississippi, Ohio, Kentucky, Illinois and other rivers. It is planned to establish a deep waterway from the Great Lakes to the Gulf of Mexico, with another along the coast from Massachusetts to Texas. In addition to the work undertaken by the National Government, several of the states, including New York and New Jersey, are engaged in waterways improvement and a number of private undertakings, chief of which is the canal across Cape Cod, are under way.

The State of New York at the present time is engaged in enlarging the Erie Canal to fit it for the passage of freight barges of 1,000 tons capacity and suitable terminals for vessels of this size must be provided in the harbor of New York. In this connection, it is proposed to build a ship canal back of Coney Island which will connect Gravesend Bay with Sheepshead Bay and thus make a continuous waterway between New York Bay and Jamaica Bay, while the Jamaica Bay Improvement Association proposes to reclaim about 13,000 acres of waste land adjacent to Jamaica Bay and to transform that now useless region into a vast navigable basin with docks and warehouses. This plan will add 153 miles of waterfront to New York Harbor and would care for the huge traffic which is expected to come to New York after the opening of the enlarged Erie Canal.

The Harlem Ship Canal between the Hudson and the East Rivers will enable the canal traffic to reach Long Island Sound without making a detour around the lower part of the city and through the crowded waters of the East River, and in order to furnish a direct connection between Long Island Sound and Jamaica Bay it is proposed to connect these waters with a canal which will have its beginning at the head of Flushing Bay. This would also give a route from the Hudson River to Jamaica Bay without passing through New York Bay. Finally, it is proposed to connect Jamaica Bay with the Great South Bay and to deepen the existing channels between Great South Bay and Great Peconic Bay so as to form an inside waterway extending the entire length of Long Island.

The latter improvement is being vigorously urged by the Inland Waterway League of Long Island, an organization with headquarters at Bay Shore and a membership representing every section of the Island. It is pointed out that while this waterway would be about 100 miles in length, it would require the construction of only about five miles of new canal, between Jamaica Bay and East Rockaway Inlet, as only the deepening and widening of the existing channels would be required on the remainder of the route. From East Rockaway Inlet to Hempstead Bay the channel is being improved by the Long Beach Improvement Company, and from this point there is an open channel all the way to Great South Bay. The latter bay is navigable by large boats, which enter through Fire Island Inlet, from Babylon to Bellport, and by small boats for its entire length. There is also a navigable channel between Great South Bay and Moriches Bay, and canals built by the state more than twenty years ago, connect Moriches Bay with Shinnecock Bay and the latter bay with Great Peconic Bay, which in turn has deep connection with Block Island Sound and Long Island Sound.

The Long Island Waterway will give a route between New York Bay and New England ports without passing through the East River and Long Island Sound, with their congested traffic and many danger points.



Map Showing Proposed Long Island Inland Waterways and Jamaica Bay Improvement.
The heavy dotted line shows where old courses are to be deepened or new channels made.

Cape Cod Ship Canal.

THE most important of the new waterways under construction is the canal across Cape Cod, which when completed will not only materially shorten the distance by water between New York and Boston, but will also avoid the dangerous shoals which line the eastern coast of the Cape. Cape Cod and Cape Hatteras have since the discovery of the continent, enjoyed the unenviable reputation of being the two most dangerous points on the Atlantic seaboard. In fog or storm they have been the dread of ship owners and seafaring men. Many a stout vessel, richly laden, has gone to the bottom; and the value lost in ships and cargoes runs high in the millions.

Cape Cod, a long, low peninsula of shifting shoals and wind-swept sands, runs its great length out into the Atlantic, crooked like an upraised bended arm with closed and menacing fist. On the north and west sides lie Massachusetts Bay and Barnstable Bay, while the east and southeast shores have claimed hundreds of human lives and oak-ribbed ships.

The necessity of a canal across the isthmus has been recognized for many years. In the early days the Indians carried their canoes along the line now selected by the engineers, and early in the nation's history memorials were sent to Congress by the people of Boston, asking the Government to undertake the building of a ship canal. The Government approved the plan, and it was endorsed by the War Department as valuable from a strategic point of view in event of war, but Congress failed to appropriate the money. Many other attempts to obtain the support of either the Government or the State of Massachusetts also resulted in failure.

Private capital was also interested, and during the past fifty years half a dozen companies have been formed to build the canal, and at least three routes have been advocated of which two, those through Buzzard's Bay or through Bass River, 29 miles to the eastward, have been seriously considered. Finally De Witt Clinton Flanagan, a New York business man, became interested in the proposition and after careful investigation of the matter, decided that the canal could be built and made to pay as a business proposition. August Belmont, the New York banker, was then interested in the plan, with the results that a company was organized, the necessary franchise obtained and the Buzzard's Bay route selected. Work was begun upon June 22, when Mr. Belmont turned the first shovel ful of earth which marked the beginning of the work. The work upon the breakwater was also begun at the same time, followed soon after by the beginning of the dredging, and it is expected that the canal will be completed in three years' time.

The canal proper will be about eight miles long, and extend in a straight line from Buzzard's Bay on the south to Sandwich, on Barnstable Bay, on the north. It will have a depth of at least twenty-five feet at low water, and at least thirty feet at high water. The minimum width will be 125 feet at the bottom, and from 250 to 300 feet at the surface, but there will be four stretches along which the minimum width will be at least 200 feet at the bottom, and 350 feet at the top, and where even the largest vessels may pass in safety and without delay. These stretches will be long enough to provide ample room for the traffic not only of the near future but for many years to come, and there will be no delays on account of steamers tying up for others to pass.

The canal will cost about $12,000,000, and can be completed in two years and a half. It will, of course, be a sea-level canal, and there will be no tide locks at either entrance.

Bringing in stone for the breakwaters of the Cape Cod Canal.

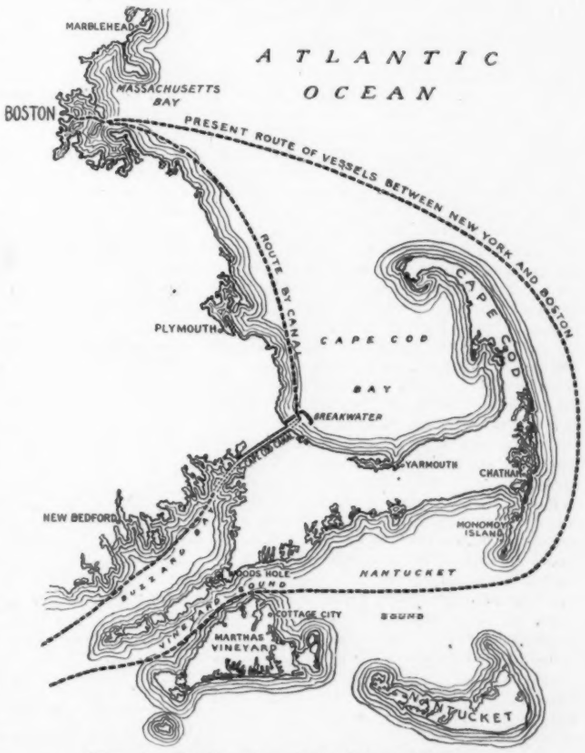
In former plans tide locks were considered necessary because the tide on the Buzzard's Bay side rises eight or nine feet, while on the Massachusetts Bay side its average rise is from four to five. In this respect there is almost a replica of conditions at Panama. There is also a similarity in that the tides do not agree, rising and falling at different hours, so that there will be a current through the canal most of the time, but this current will not be strong enough to interfere with navigation or to affect the channel injuriously. On the contrary, this current, together with the disturbance caused by the passage of vessels, will be relied upon to keep the water of the canal, which of course will be salt, from freezing, and consequently the canal will be open all the year.

Borings to determine the character of the soil have been made over practically every foot of the ground, and it has been found to be composed entirely of gravel, sand and loam. There are no quicksands, no rock ledges and no boulders, except a few on the surface. The average height of ground above tide water level is nine feet, and only a few years ago the waters of the two rivers which drain from northern and southerly slopes of the neck approached in a time of flood tides to within three hundred yards of each other. The character of the soil will render unnecessary any retaining construction on the sides except at a few points of no great length, where ordinary rip-rap will be all that is required. A channel two miles long will be dredged in Buzzards Bay and another half a mile long in Barnstable Bay. As the latter is exposed to storms from the north and northeast, it will be protected by a stone breakwater, 2,400 feet in length.

Commerce will derive great advantage by reason of the shortness of this new water route compared with those now in existence. Boston and New York will have their waterway shortened by seventy-four miles over the Vineyard Sound route, and one hundred and forty-two miles over the outside sea route around the Cape. The distance, therefore, will be equally shortened between Boston and Philadelphia, Wilmington, Baltimore, Norfolk, Newport News, Charleston, Savannah, Florida and New Orleans. Moreover, it will have the farther advantage of a comparatively inland route, avoiding innumerable shoals and a region unfavorably affected by storm and persistent fogs productive of exceptional dangers, delays and losses of ships, property and lives.

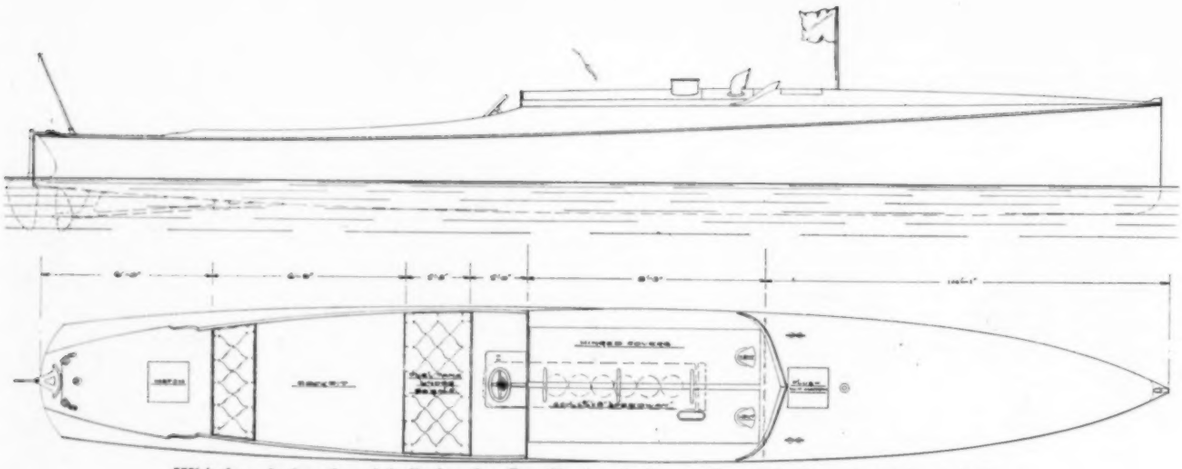
According to the statistics of the U. S. Life Saving Service, the loss of vessels, lives and property by shipwreck on the shores of Cape Cod amounts to a vessel and a life every month and a half, and a property loss of $6,533 each month, all of which might be saved by a canal across the Cape. That a very large proportion of the commerce now passing around Cape Cod will eventually be drawn through the ship canal is not to be questioned, for commerce, other things being equal, moves along the line of least resistance.

The War and Navy Departments regard the building of the canal with undisguised pleasure. The canal becomes a valuable artery in case of war, and it provides the missing link in the chain of interior tide water lines which stretch from Cape Ann on the north through the estuaries, tributaries and artificial channels of the different states to the southernmost extremity of Florida. Through the canal can pass any battleship in the United States Navy, and of course any smaller vessel. For the host of small cruising craft which every summer swarm along the coast, and to whom safety is the principal consideration, it will remove the most formidable danger.



Map showing location of the Cape Cod Canal.

August Belmont beginning the construction of the Cape Cod Canal.



Whistler, designed and built by the Gas Engine & Power Co. and Chas. L. Seabury & Co.

New Motor Boat Designs.

A Speedy Runabout.

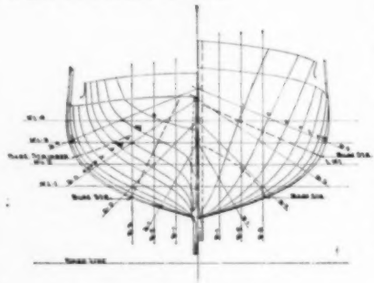
WHISTLER, whose plans are shown above, was designed by Charles L. Seabury and built by the Gas Engine & Power Company and Chas. L. Seabury & Company, Consolidated, at Morris Heights, New York City, for Ralph E. Slaven, of the New York Yacht Club, as a tender to his 99 foot cruising yacht Alfredine IV. The builders guaranteed a speed of 28 miles per hour, but repeated trials have shown that the boat is capable of a speed of 29½ miles an hour, making it a remarkably speedy craft for its size and power. It is also a particularly stiff and able boat for its type and is unusually dry, even when running at extreme high speed. (See cut on page 42.)

The boat is 39 feet 4 inches over all, 5 feet 4 inches beam and is equipped with a 6-cylinder Speedway motor, with cylinders 6¾ inches bore and 8 inches stroke and running at 940 revolutions per minute, when the boat is developing its maximum speed of 29½ miles per hour. The engine is fitted with a double system of ignition, comprising a Bosch high tension magneto with jump spark plugs and in addition the Bosch magnetic plug system with low tension magneto.

It is located amidships in the boat and is covered with two hinged covers, each of which is provided with a ventilating cowl. There is a bulkhead forward of the motor, forming a watertight compartment which is accessible through a flush hatch in the forward deck. There is also a bulkhead aft of the motor upon which are arranged an inclined steering wheel, of the automobile type, and the motor controls.

In the forward end of the cockpit, which is unusually large for this type of boat, is an upholstered cross seat for the steersman, underneath which is the gasoline tank with a capacity of 90 gallons. There is a second upholstered seat at the after end of the cockpit.

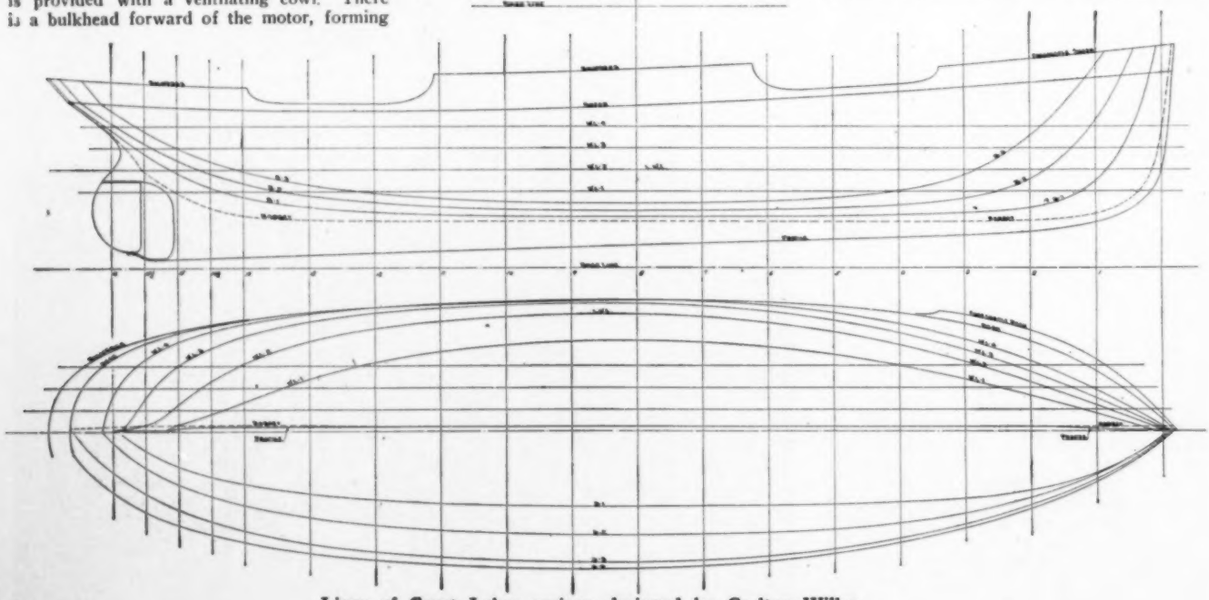
The hull is built with teak wood planking below the waterline and Spanish cedar above the waterline. The decks, covers over the motor compartment, combing and interior trim are also Spanish cedar and the boat is varnished bright both inside and out.



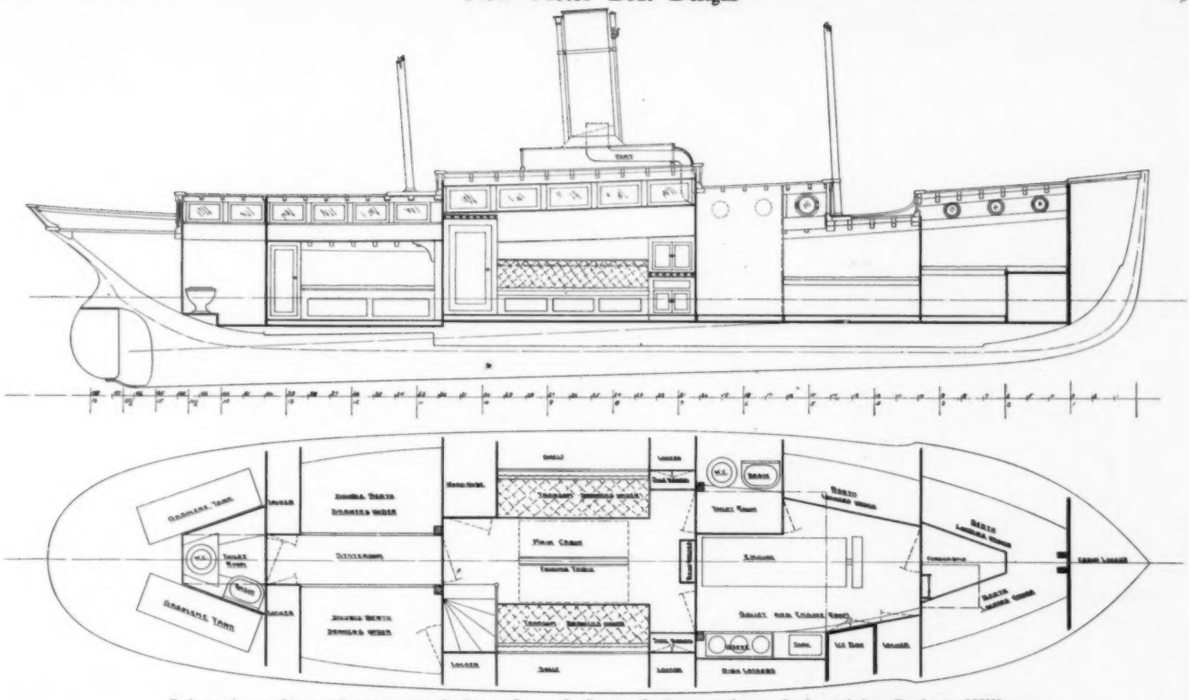
A Great Lakes Cruiser.

THE plans for a somewhat novel cruiser are shown herewith, the design of Carlton Wilby, naval architect, of Detroit, Michigan. This boat is to be built during the coming winter for H. B. Larsen, of Manistee, Mich., and will be used by the owner for summer cruising upon the Great Lakes. The dimensions of the boat are as follows: length on deck, 50 feet 6 inches; length on the waterline, 48 feet; draft, 4 feet 1½ inch; least freeboard, 2 feet 8½ inches.

The proposition, as submitted to the designer, was to produce a boat of about fifty feet in length, with the general appearance of an ocean-going freight steamer and the accommodations of the modern motor cruiser. That the idea is not as unfeasible as would at first appear, can be seen from an inspection of the drawings. In profile the lines resemble a freight steamer very closely; with elliptical fantail stern, high forecastle, and bulwarks aft, giving the semblance of a high poop deck. In section, the straight side, hard bilge, and flat floor of the typical tramp steamer, have been modified considerably for the sake of appearance and seaworthiness; it being an obvious impossibility to produce an easy boat of comparatively light displacement, upon the specified lines. Above water, however, the



Lines of Great Lakes cruiser, designed by Carlton Wilby.



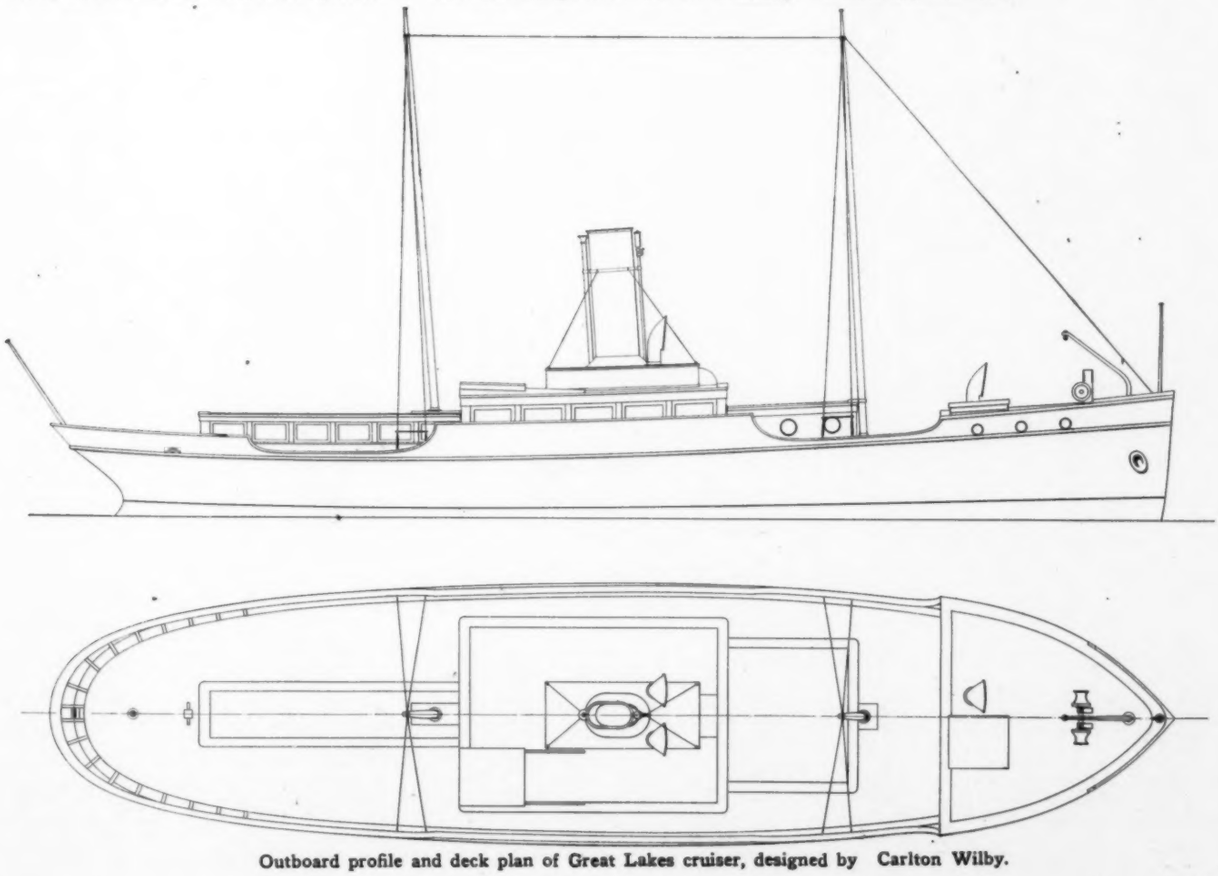
Inboard profile and accommodation plan of Great Lakes cruiser, designed by Carlton Wilby.

sections are of a character to carry out the desired illusion, and at the same time preserve a graceful appearance.

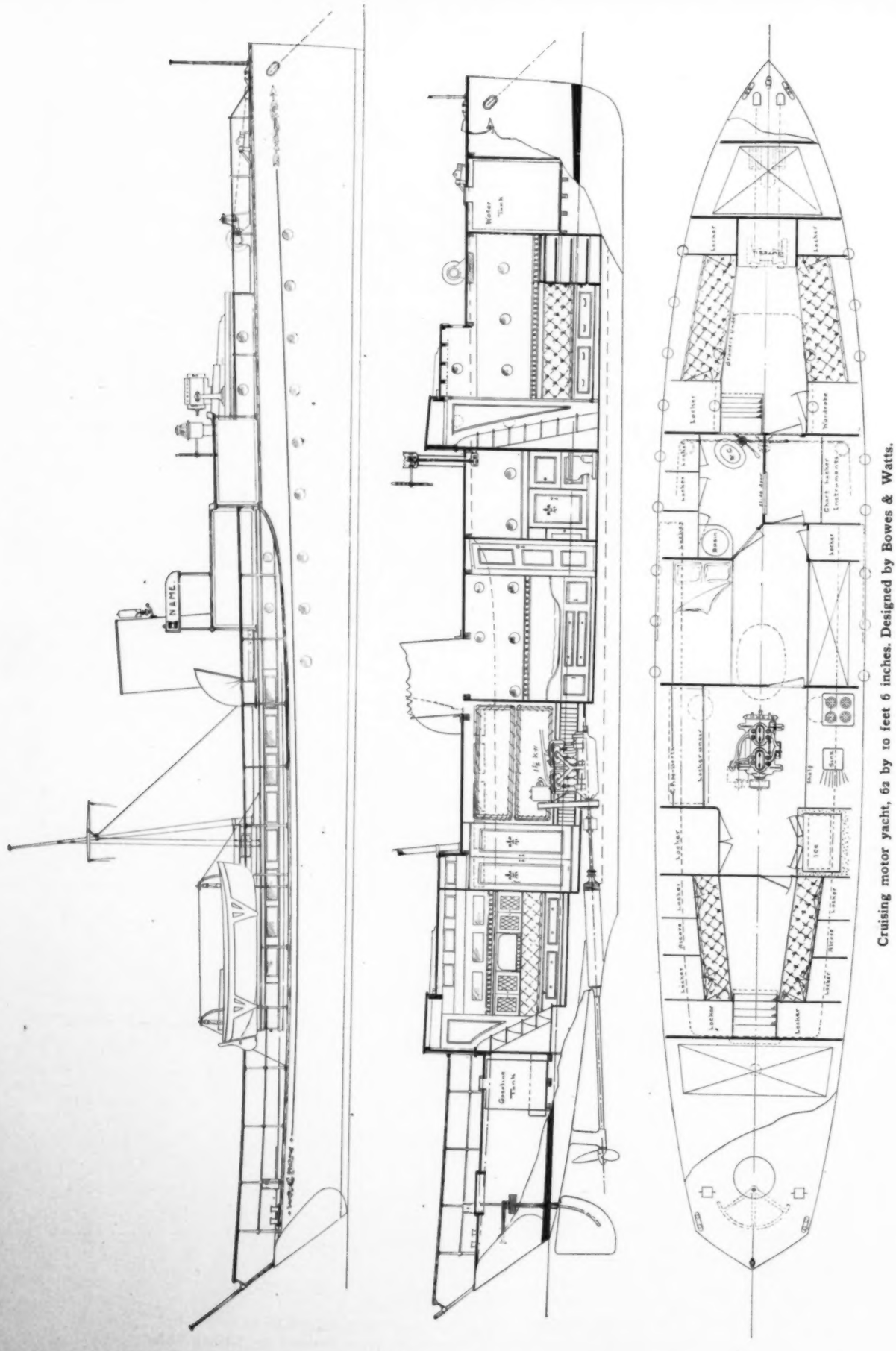
The accommodations below decks show exceptional room for a boat of this length. The main cabin is located almost amidships, with a companionway aft upon the starboard side. This compartment has clear headroom of 6 feet 9 inches, and is fitted with the usual transoms, sideboards, lockers, etc. Opening aft of the main saloon is a state room provided with two double berths and having a private toilet room. Forward of the saloon is the engine room, galley and toilet room, with all the usual conveniences. Two berths are provided in the forecastle and one in the engine room, giving sleeping accommodations for nine persons in all. An engine of about 50 h.p. will be installed, with the muffler located in the stack casing, and exhausting through the escape pipe in the stack.

The deck arrangement lends itself admirably to the needs of a boat of this type, there being ample deck space for chairs, both forward and aft. The boat will be steered from the forward bridge.

The construction has been very carefully worked out, to give adequate strength without unnecessary weight. The keel is of white oak, sided 5 inches; the frames of steam-bent white oak, 2¼ x 2 inches, spaced 12 inches between centers; the planking of hard pine to finish 1¼ inch thick.



Outboard profile and deck plan of Great Lakes cruiser, designed by Carlton Wilby.



Cruising motor yacht, 62 by 10 feet 6 inches. Designed by Bowes & Watts.

A 62-Foot Cruiser.

ON the opposite page are shown the plans of a cruising yacht 62 feet in length designed by Bowes & Watts, of Philadelphia, for A. L. Riker, vice-president of the Locomobile Company of America, Bridgeport, Conn. The dimensions are: Length over all, 62 feet; beam, 10 feet 6 inches; draft, 3 feet 6 inches. The headroom is 6 feet 9 inches in the forward compartments, 6 feet in the engine room and 6 feet 6 inches in the after cabin.

The object of the design was to obtain a seaworthy and easily driven hull with a small amount of power, the speed required being only 11 nautical miles an hour. The long, clean lines of the hull, the raised forward deck, large ventilating stack and signal mast give the boat a noticeably trim and yachty appearance, while the arrangement is rather remarkable on account of the amount of accommodation in proportion to the size of the boat and the small space required for the engine room, galley and crew's quarters.

The fore peak contains two watertight bulkheads, between which is the fresh water tank. Then comes a forward state room, 11 feet long and 10 feet wide. Upon either side of this room is a double extension transom berth with drawers underneath, while a locker or wardrobe is arranged in each corner. From the after end of the room there is a companionway to the deck. The room is lighted and ventilated by ports, of which there are four upon either side and four more in the companionway trunk.

Aft of the forward state rooms on the starboard side is a passage leading to a second state room. On the starboard side of this passage is a locker for charts and instruments and on the port side is the toilet room containing three large lockers and the usual toilet facilities. The state room has a double berth upon either side with drawers underneath and a large clothes locker upon the starboard side. It is lighted by five ports on each side.

Next aft is the engine compartment, 9 feet 6 inches long and 10 feet wide, which also contains the galley and crew's quarters. The galley is arranged upon the starboard side and includes a four-hole vapor stove, sink, ice-box, etc. Upon the port side are two folding pipe berths and a large clothes locker. The motor is a 40 h.p. four-cylinder Locomobile engine, which will drive a 36-inch, three bladed wheel at 800 revolutions. It is belted to a 1½ kilowatt dynamo which will provide current for a searchlight and for interior lights throughout the boat.

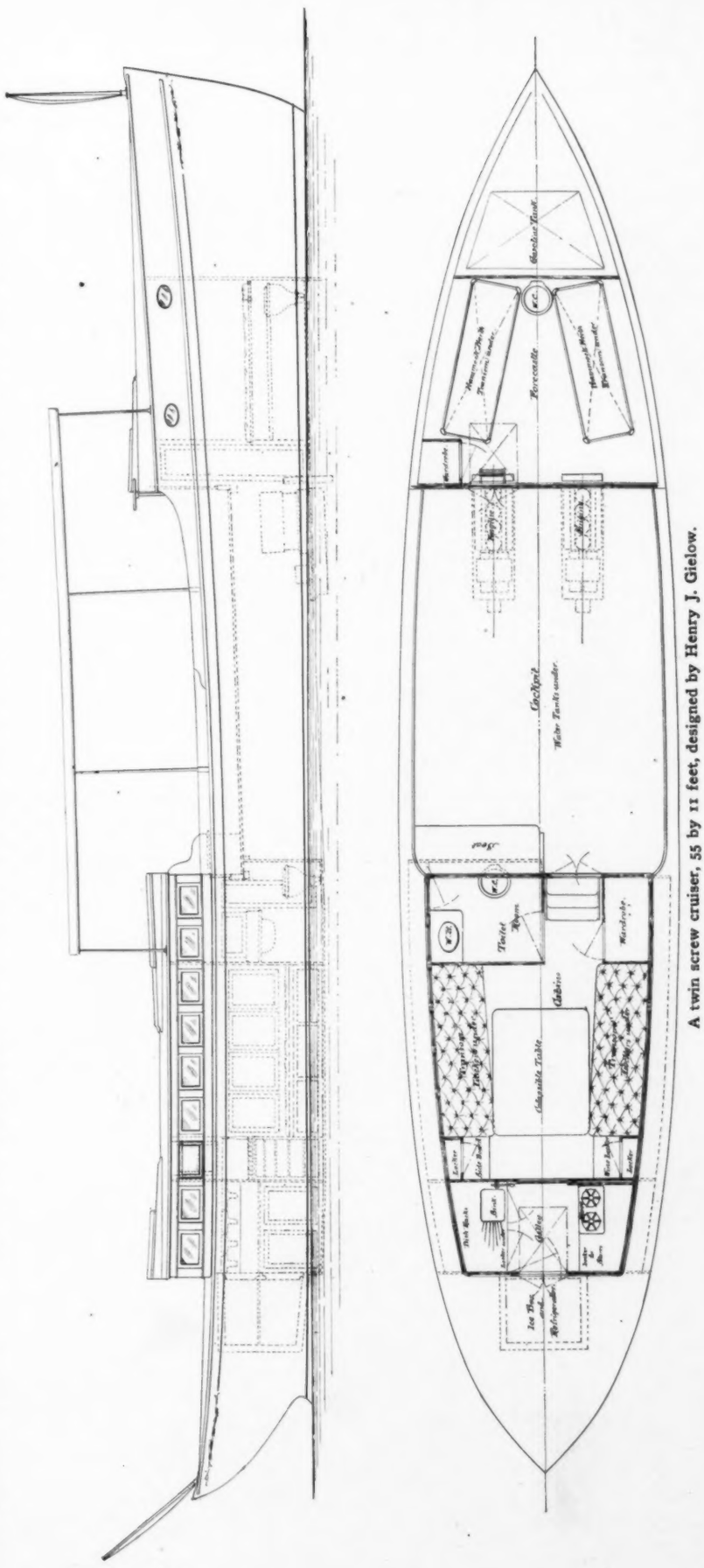
Aft of the engine room and connecting with it is an after saloon which will be principally used as a dining room, although it has two double transom berths, one upon either side, above which are lockers and shelves for silver and glassware, etc. A companionway leads to the after deck, beneath which the gasoline tank is arranged.

The boat is arranged to be steered and controlled from the forward deck, just aft of the forward companionway, where a space for the steersman is enclosed by weather cloths. A signal mast is rigged just aft of amidships and a tender will be carried upon davits upon either side.

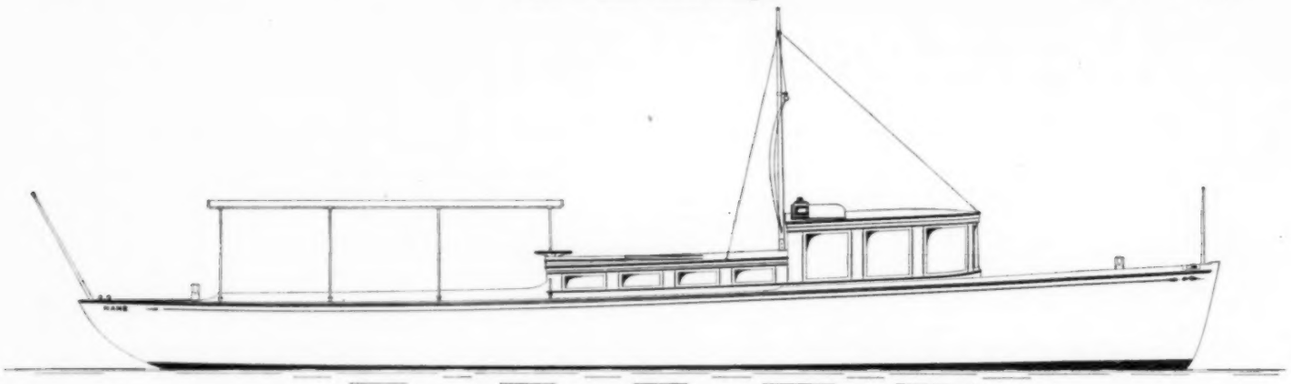
Twin Screw Cruiser.

THE most striking feature of the design upon this page is the arrangement of cockpit amidships, with cabins both forward and aft. This arrangement is very common abroad, but is seldom seen in this country. Its principal advantage is the separation of the engine room and crew's quarters from the owner's part of the boat and the wider outlook which is possible from the cockpit.

The principal dimensions of the boat, which has been designed by Henry J. Gielow, of New York City, for E. C. Blum, of Brooklyn, N. Y., and will be used on Great South Bay,



A twin screw cruiser, 55 by 11 feet, designed by Henry J. Gielow.



A day cruiser, 47 by 9 feet, designed by Charles D. Mower.

are as follows: length over all, 55 feet; length on the waterline, 49 feet; beam, 11 feet, draft, 2 feet 3 inches. The head room in the cabins is 6 feet 6 inches and in that part of the engine room which extends underneath the cockpit, 3 feet 6 inches.

The forward part of the boat is occupied by the forecastle, which is covered by a raised deck 16 feet in length. The gasoline tank is located in the fore peak and is separated from the crew's quarters by a watertight bulkhead. The crew's quarters contain a folding pipe berth upon either side with a transom underneath, wardrobe and toilet conveniences. This room is 8 feet long and 9 feet wide, and is reached from the cockpit by a companionway on the port side.

The cockpit is 15 feet long and 9 feet 9 inches wide. The two 20 h.p. motors are arranged under the forward part of the cockpit with their flywheel projecting into the crew's quarters and are easily accessible, as there is 3 feet 6 inches clearance between the floor and the deck beams. The water tanks are placed under the after part of the cockpit.

The after cabin is 16 feet long and includes the owner's room, 11 feet 9 inches long by 8 feet 6 inches wide, and the galley, 3 feet 6 inches long by 7 feet wide. The cabin is entered from the cockpit by a companionway on the starboard side, alongside of which is a large wardrobe, while on the port side a portion of the room is partitioned off for the toilet room. There is a double transom berth with drawers underneath upon either side and in the center of the room a folding dining table may be arranged. At the after end of the cabin a sideboard is arranged upon the port side and a wine closet upon the starboard side. The room is finished in mahogany and is lighted by square windows in the side of the trunk.

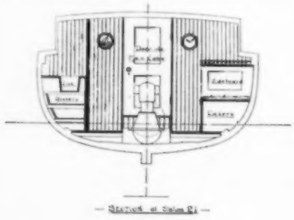
The galley is separated from the cabin by a bulkhead with a sliding door and is provided with a vapor stove, sink and the usual closets for dishes, etc. The ice-box is placed under the after deck, with the doors opening into the galley. A companionway gives access to the after deck, so that the galley may be reached without passing through the owner's room.

A Day Cruiser.

THE plans on this page show a day cruiser designed by Charles D. Mower, of New York City, for R. C. Pryor, of Houghton, Mich., for use on Lake Michigan. The dimensions are: length over all, 47 feet 3 inches; length on water line, 42 feet 3 inches; extreme breadth, 9 feet; extreme draft, 3 feet.

The aim of the designer has been to produce a fast and comfortable boat for day service and at the same time one sufficiently seaworthy to be safe in the bad weather which must be encountered at times on Lake Michigan. The design shows a clean lined hull of the modern canoe type with sharp waterlines forward and a clean run aft. The sheer is unbroken by a raised side or decks and the boat has a clean cut and well proportioned outboard appearance.

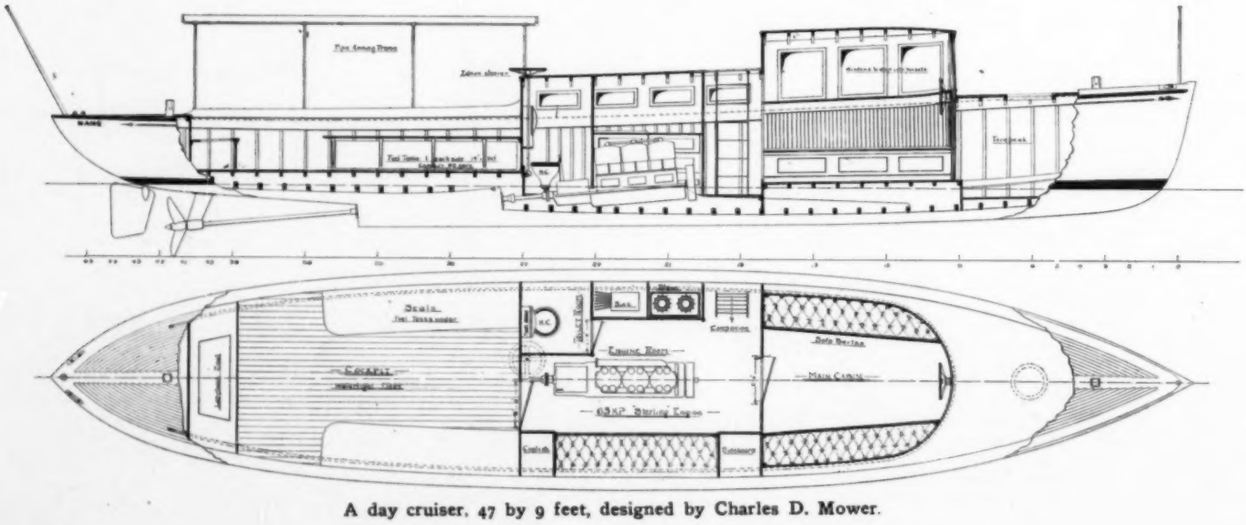
The flush deck forward is unbroken except for a screw hatch which gives access to the fore peak. This space is reserved for the stowage of cables, etc., and does not contain the fuel tanks, which are placed under the seats in the cockpit. This arrangement not only provides a shorter pipe line from the tanks to the motor, but also tends to greater safety than the ordinary arrangement, as any leakage from the tanks into the cockpit will be carried directly over board, on account of the cockpit being self-bailing, and cannot pass into the interior of the boat.



The main cabin, which comes next, is arranged as a pilot house, with a steering wheel and signals to the engine room, but may also be used as a sleeping room, as it has a double extension berth upon either side. It has large plate glass windows upon three sides which are arranged to drop into pockets when opened, giving an abundance of air in warm weather.

Aft of the main cabin is the engine room, containing a six-cylinder 65 h.p. Sterling motor, which is expected to give the boat a speed of nearly 16 miles an hour. On the starboard side of the engine room is a double transom berth, sideboard and locker and on the port side a companionway to the deck, vapor stove and sink. In the corner on this side a toilet room is arranged and on the starboard side is a door leading to the cockpit. This has seats upon either side under which are the fuel tanks, each having a capacity of 60 gallons, and at the after end is a wide seat with a lazy back. The boat may be steered in pleasant weather from a wheel at the after cabin bulkhead, the cockpit being covered with an awning stretched over a pipe frame. The boat will be lighted throughout by electricity and will be complete in every detail.

The construction is strong and substantial, the frames being of oak 1¼ inches square and spaced 12 inches between the centers. The planking is of 1 inch yellow pine and the deck of 1⅛ inch white pine. The keel is of oak, sided 5 inches, and the clamps and bilge stringers are of yellow pine 1¼ by 4 inches. The fastenings are copper throughout. The interior finish is in mahogany. The boat is now under construction at Houghton, Michigan, and is expected to be launched during the present month.



A day cruiser, 47 by 9 feet, designed by Charles D. Mower.

How Fuel Systems Should be Installed

The Various Methods Used for Storing Gasoline and Feeding It to the Carbureter. Advantages and Limitations of Each—Precautions to Ensure Safety.

By Frederick K. Lord.

CONSIDERING the great improvement in both hulls and engines in recent years it is remarkable how little attention the method of fuel supply has received.

Not only are there many motor boat owners who are unfamiliar with the various systems available for supplying fuel to the motor, but there even seems to be a remarkable indifference on their part as to what system they use or how well it is installed in their boats, though every little while a fire aboard a boat serves to remind us of the fact that gasoline is dangerous stuff to handle carelessly.

A man will do every thing in his power to protect his family on land, but will take them out on the water in a boat having a gasoline installation dangerous in the extreme. Custom regulates many things and it has been the custom for the owner to take what the boat builder or engine man gives him and let it go at that. In some cases the mode of installation is selected not because it is best but because it is the cheapest.

The recent offshore cruising races where peril from fire is great have caused most owners of boats taking part in these contests to go into the installation proposition very carefully, and their example is beginning to have a very beneficial effect on motor boat owners in general, some of whom now take a personal interest in the layout of their fuel system and see that it is carefully installed.

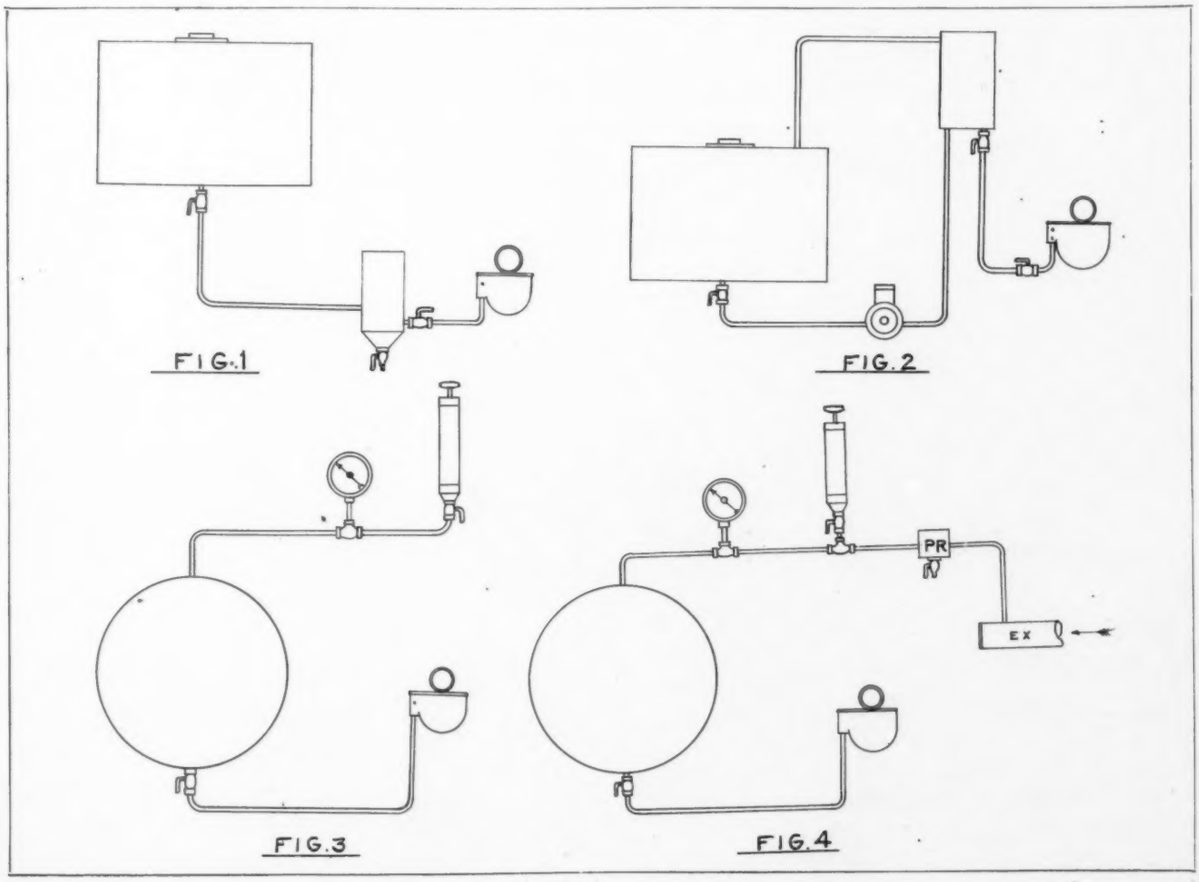
Those who have become interested and have wished to look the matter up, however, have found but meager and scattering descriptions of the various methods of installation, and it is the purpose of this article to show the various systems, suitable for motor boats, and give a brief description of each. The accompanying illustrations are mere sketches to show the general arrangement in each case, and are not drawn to scale or intended to be accurate in detail.

The first system shown is the elementary gravity feed type used in the vast majority of boats, particularly of the small open type. This is the simplest and cheapest means of attaining the end, and is as good as any where the tank is located on top of the cabin, or in the bow or stern and the head is ample. If the tank is located amidship, which is the ideal place for it, there is often difficulty in getting sufficient flow to the carbureter. This may be overcome in most cases by dropping the carbureter a few inches, which does not materially affect its efficiency in most motors and generally will work satisfactorily.

Where the pipe line is long and the supply nearly exhausted there will sometimes be an interruption in the flow of the fuel when the boat is pitching or mounting a following wave. This will make the carbureter backfire and slow down the motor. To obviate this, a coil is sometimes put in the pipe near the intake to give a reserve supply for a few seconds. A better method is that shown in Fig. 1, where a small stand pipe is put in close to the carbureter. This maintains a more steady pressure, and by having a drain cock at the bottom it may be used as a separator and filter.

A word here in regard to the material which should be used in fuel tank installation. There is only one metal fit for conducting gasoline and that is copper pipe or tubing, and there should be a law forbidding the use of lead piping on a boat. It is very dangerous, being extremely liable to crystallize and break from small vibrations and is easily worn through by lying on any hard wood, such as oak or yellow pine. Probably half the fires reported are caused by one or the other of these two things happening under the flooring where they are out of sight. Tin is little better than lead and is more liable to corrosion from acids and gases, as from sloppy storage batteries. Brass is poor stuff because its gets "short" and brittle when exposed to salt water and is liable to crack in the threads.

Take a good piece of ⅜ inch copper tubing and anneal it and you have something which will last as long as the boat. This tubing must be threaded and screwed into the unions or valves and sweat soldered. This will make a strong and tight joint. With this construction there is nothing to watch for leaks but the unions and valves, for I have never known a copper pipe to fail when it was properly annealed and soldered. For the same reasons, there is nothing to equal copper tanks for small boats, though in large boats, cylindrical steel tanks may be safely used.



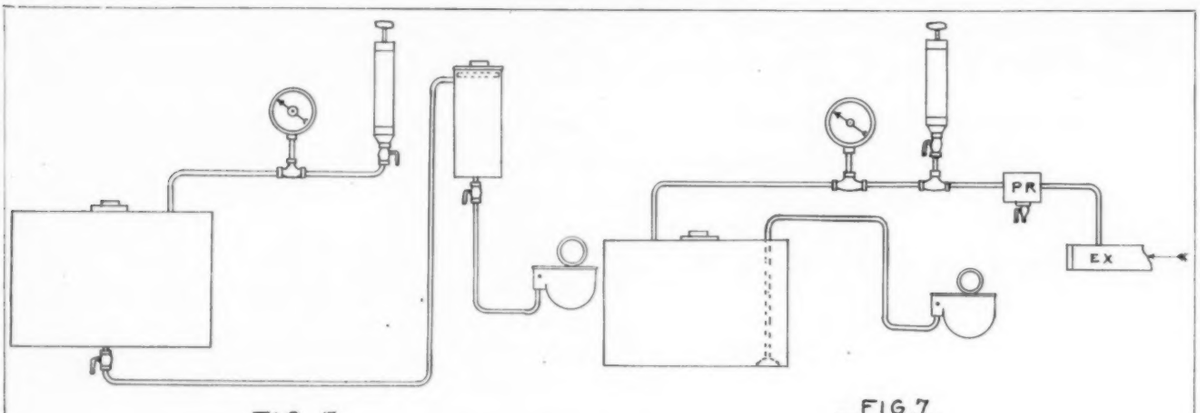


FIG. 5

FIG. 7

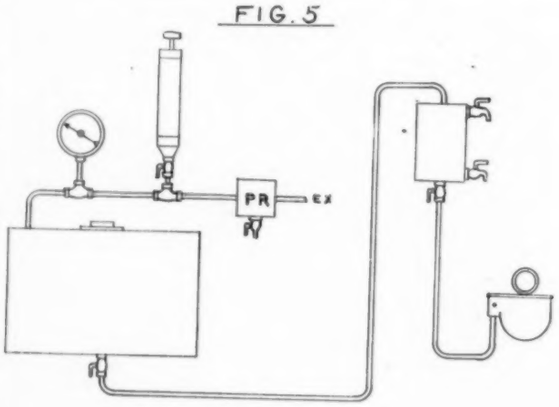


FIG. 6

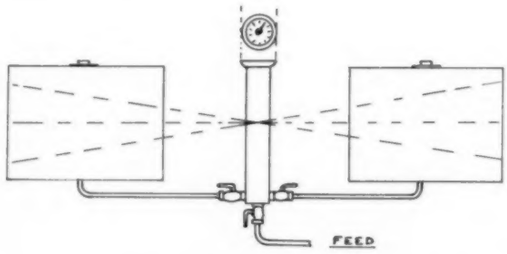


FIG. 8

Unions and valves should be the best it is possible to obtain. There are several manufacturers who make very good fittings for this purpose, and it is much better to obtain these than to take chances with unsuitable or inferior material. Two styles of unions are suitable, the standard ground union and the one having two flat surfaces to be drawn together with a paper gasket set in shellac. A globe valve may be used or a ground petcock. The latter if well made is apt to remain tight and it has no gland with packing which is liable to leak, as is the case with the other valve.

Care should be used in venting gravity tanks. It is better to run a small copper tube to the outside of the boat in some place where it is protected from water.

It is well, particularly if lead pipe has been installed in your boat, to carry a bottle of mushy yellow shellac and some strips of cloth. Then if a leak occurs it can be bound about with the cloth strips soaked in shellac, which will make an effective temporary repair.

Although gravity feed is the common system and, as before stated, is good at times, yet it is often unsatisfactory and in many cases it could be replaced with another and better system without much trouble or expense. This is the compressed air system, which is coming more and more into use especially in the larger boats. Or as an intermediate step the pump system might next be mentioned. This is shown in Fig. 2.

A gasoline pump attached to the motor forces the fuel through a stand pipe up to a small reservoir whence it is fed by gravity to the carbureter. As the capacity of the pump of course is greater than the required supply there is an overflow pipe leading back to the tank.

This system is good for some positions of the tank and has the advantage of giving a uniform pressure on the feed line. When at rest the gasoline is prevented from running back through the pump by shutting it off under the tank. There will always be some air imprisoned in the tank which will prevent it siphoning back from that end of the line. The small tank being always full there is ample for starting up the motor. The weak spot in this system is the pump. It is liable to leak and if it should break down, the boat is disabled.

The latest and best method is the compressed air system which is coming more generally into use on account of its many good points. It is flexible, provides two ways, manual and automatic, of keeping up the supply, enables the tanks to be placed anywhere and allows the piping to be arranged as desired. Outside of the danger of the pipes becoming clogged, which can happen with any system, its one drawback is the necessity for keeping the pipe tight. This may cause trouble at first but when once remedied, satisfaction generally results.

Fig. 3 illustrates the air system in its simplest form. From the top of the tank a pipe is run to an ordinary hand air pump, and on this line an air gauge is placed. When ready to start, a half minute of pump-

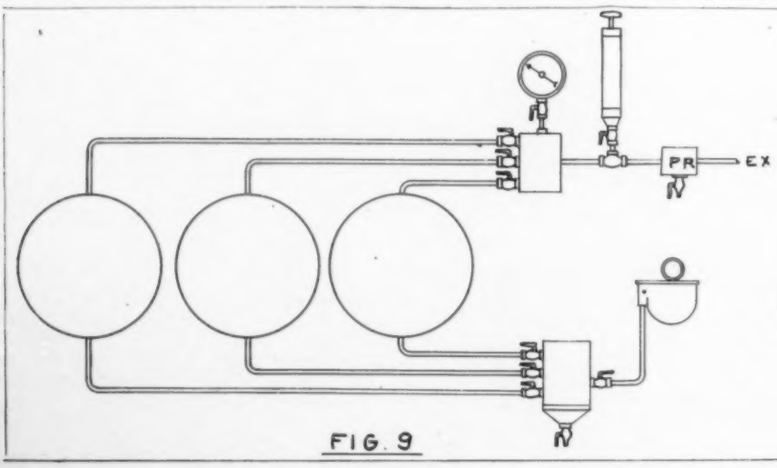


FIG. 9

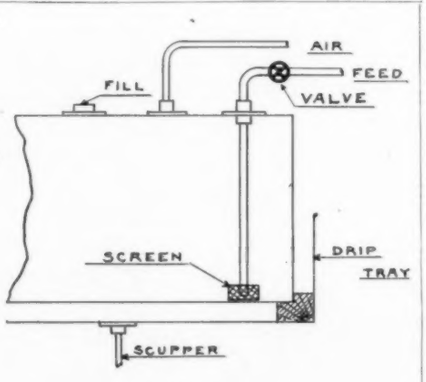


FIG. 10

ing will raise the pressure to two pounds, which will be ample in most cases. After the boat is under way, a few strokes occasionally will be sufficient to maintain the pressure.

This is the simplest method but as such it has a flaw in the ever varying pressure, which might cause some carbureters to work erratically. To overcome this a combination of the air and gravity feed is sometimes employed as shown in Fig. 5. An auxiliary tank is used and the gasoline is forced into this, from which it flows by gravity to the carbureter. A float is placed in the top of the auxiliary tank which shuts off the supply when it becomes full. There is always some fuel in the tank to start with and it is not necessary to pump immediately. In this case, too, the pressure is maintained by hand but the feed pressure is more nearly constant.

A better system and one giving a constant pressure is shown in Fig. 4. A pipe is tapped into the exhaust line and this pressure is led to a pressure regulator P R, which also separates any oil or water from the gasoline. The pressure is at first pumped up by hand, but once the motor is started it keeps the system going automatically. This arrangement is identical with Fig. 3 except for the separator. The idea of using the exhaust to raise pressure in a gasoline tank may sound alarming to many, but there is really no danger as the separator absolutely prevents any danger from the spent gases. With the automatic system on a boat set to run over a thousand revolutions the pressure will slowly drop if for any reason the motor is required to be run under three hundred, and the hand pump must be used occasionally.

Another system combining the advantages of gravity, air and automatic feeding is that illustrated by Fig. 6. Here the arrangement is the same as the one just described, but with the addition of an auxiliary tank. The pressure is sent to this tank and thence to the carbureter. Two pet cocks are fitted at top and bottom and as the tank is always full of gasoline the motor can be started by gravity feed by opening the upper pet cock to give air relief. Moreover, as there is always some air imprisoned in the top of this tank there is no danger of the fuel spilling out of the open cock. There is a pet cock on the bottom for drawing off gasoline for priming, etc.

Fig. 7 shows the same system as Fig. 4, but with one improvement. The feed pipe is introduced through the top of the tank and thus there are no holes in the bottom, which reduces the danger of leakage.

Fig. 10 shows a detail of this arrangement. The feed pipe goes down to within one-half inch of the bottom where it is surrounded by a gauge strainer. A valve in the top shuts off the pressure. The tank is set in a drip pan fitted with an outboard drain or scupper. This makes a very good and safe system.

The system just mentioned can be used on any number of tanks. A battery of three is shown in Fig. 9. Of course the tanks can be placed any where and the arrangement of piping would be the same. The feed and the air lines are each led to a small chamber having the outlets for exhaust and intake for gasoline fitted to the opposite side. By opening and shutting the pet cocks all, or any particular tank, can be put under pressure or discharged. The discharge tank is fitted with a separator making this a very simple and safe system. The feed may be taken off at the top, but for ease of illustration it is shown at the bottom.

Where two tanks are placed on each side of the boat and fed by gravity an arrangement such as shown in Fig. 8 is convenient. Midway between, a stand pipe is introduced having a gasoline gauge showing on top. The piping is led to the stand pipe and thence from a cock at the bottom to the carbureter. By shutting the valve either tank may be used or both at once. Sometimes when a long trip is made with the wind on the beam listing the boat over, the windward tank can be kept full and the leeward one emptied, thus helping to keep the boat on a more even keel. The levels can be equalized any time by opening both valves. By placing the stand pipe exactly between the tanks, the gauge will record the average of the two in spite of any list or roll, as indicated by the dotted lines in the sketch.

Regarding the relative merit of the various systems shown it might be stated in general that the gravity feed is best for very small open boats. The system indicated by Figs. 4 and 7 are well suited for small cruisers and speed boats, and Figs. 6 and 9 show systems adapted to all large boats. Individual conditions would largely govern the system used, and in many cases a combination of several might be found to work to the best advantage.

August

Aug. 5-7—Houston Launch Club. Third Annual Regatta.
Aug. 5-6-7—Houston Launch Club, Houston, Tex.
Aug. 7—Jubilee Yacht Club, Beverly, Mass. Fourth Race for Vittum Cup.
Aug. 7—Detroit Motor Boat Club. Economy Race.
Aug. 7—Hempstead Bay (N. Y.) Yacht Club. Club Regatta.
Aug. 7—Ocean City Yacht Club. Open Amateur Regatta.
Aug. 7—New England Engine and Boat Association. Annual Regatta.
Aug. 7—Quincy Yacht Races. Races.
Aug. 7—Savin Hill Yacht Club. Dorchester, Mass. Races.
Aug. 7—Independent Yacht and Boat Club, Northport, N. Y. Handicap Races.
Aug. 7—Gloucester Yacht Club. Club Race.
Aug. 8—Cleveland Power Boat Club. Club Races.
Aug. 8—Erie Basin Yacht Club, Brooklyn, N. Y. Races.
Aug. 8—Pistakee (Ill.) Yacht Club. Races.
Aug. 12—Rochester Yacht Club. Races.
Aug. 12—New York Yacht Club. Motor Boat Races. Rockland, Me.
Aug. 14—Detroit Motor Boat Club. Club Race.
Aug. 14—Savin Hill Yacht Club, Dorchester, Mass. Races.
Aug. 14—Ventnor Motor Boat Club, Atlantic City, N. J. Regatta.
Aug. 14—Gloucester Yacht Club. Club Race.
Aug. 17—Western Power Boat Association. Regatta.
Aug. 17-18—Annual Regatta Western Power Boat Assn., at Peoria, Ill. Auspices Illinois Valley Yacht Club.
Aug. 19-21—Thousand Island Yacht Club, Alexandria Bay, N. Y. Gold Cup Races.
Aug. 21—Detroit Motor Boat Club. Open Long Distance Race.
Aug. 21—Pittsburg Launch Club. Regatta.
Aug. 21—Mohawk Yacht Club, Bridgeport, Conn. Races.
Aug. 21—Royal Vancouver (B. C.) Yacht Club. Races.
Aug. 21-22—Toledo Yacht Club. Long Distance Race.
Aug. 21—Ocean City (N. J.) Yacht Club. Women's Races.
Aug. 21—Wildwood (N. J.) Yacht Club. Open Regatta.
Aug. 21—Cape May Yacht Club. Open Regatta.
Aug. 21—Independent Yacht and Boat Club, Northport, N. Y. Handicap Races.
Aug. 21—Gloucester Yacht Club. Club Race.
Aug. 22—Pistakee (Ill.) Yacht Club. Races.
Aug. 23-28—Inter-Lake Yachting Assn. Regatta, Put-in-Bay, Ohio.
Aug. 25—Bellport (L. I.) Yacht Club. Races.
Aug. 28—Detroit Motor Boat Club. Club Race.
Aug. 28—Holly Beach (N. J.) Yacht Club. Speed Races.
Aug. 28—Savin Hill Yacht Club, Dorchester, Mass. Races.

Long Distance Motor Boat Races, 1909.

June 5—Motor Boat Club of America, New York to Bermuda, 748 miles. Won by Heather, Richard Levering, Cincinnati, Ohio. Time, 80h. 56m. 18s.
June 19—New York Athletic Club, Whortleberry Island to Block Island, 115 miles. Won by Martha, Paul Kossek, New York.
July 3—New York Motor Boat Club, New York to Albany and return, 270 miles. Won by Martha, Paul Kossek, New York.
July 5—Albany Yacht Club, Albany to New York, 135.7 miles. Won by Irene II, S. W. Granberry, Newark, N. J.
July 10—Yachtsman's Club of Philadelphia, Ocean near Beach Haven, N. J., 87½ miles. Won by Lady Maud, Dr. C. S. Street.
July 17—Crescent Athletic Club, New York to Marblehead, 285 miles. Won by Elmo II, F. D. Giles, Jr., New York.
July 31—Colonial Yacht Club, New York around Long Island, 252 miles.
August 11—Newport Yacht Club, around Block Island, 101 miles. Entries close on August 9 with Geo. N. Buckhout, Newport, R. I.
August 12—Rochester Yacht Club, on Lake Ontario, 290 miles. Entries close July 15 with Clute E. Noxon, Rochester Yacht Club, Rochester, N. Y.
August 21—Toledo Yacht Club, on Lake Erie, 165 miles.

September

Sept. 1—Willamette Motor Boat Club, Portland, Ore.
Sept. 1—Waucoma Yacht Club, New Haven, Conn. Annual Regatta.
Sept. 4—Detroit Motor Boat Club. Novelty Race.
Sept. 4—Savin Hill Yacht Club, Dorchester, Mass. Races.
Sept. 4—New Haven Yacht Club. Fall Regatta.
Sept. 4—Gloucester Yacht Club. Club Races.
Sept. 4-5-6—Royal Vancouver (B. C.) Yacht Club. Cruise.
Sept. 4-9—Vallejo (Cal.) Yacht Club. Races.
Sept. 5—Pistakee (Ill.) Yacht Club. Races.
Sept. 6—Jubilee Yacht Club, Beverly, Mass. Fifth Race for Vittum Cup.
Sept. 6—Holly Beach (N. J.) Yacht Club. Open Race. All Classes.
Sept. 6—Beverly Yacht Club. Races.
Sept. 6—Hempstead Bay (N. Y.) Yacht Club. Open Regatta.
Sept. 6—Fall River Yacht Club. Races.
Sept. 6—Quincy Yacht Club. Races.
Sept. 6—Ventnor Motor Boat Club, Atlantic City, N. J. Regatta.
Sept. 6—Gloucester Yacht Club. Club Races.
Sept. 6—Marietta Power Boat Assn. Speed Races.
Sept. 11—Holly Beach (N. J.) Yacht Club. Final Races.
Sept. 11—Detroit Motor Boat Club. Club Race.
Sept. 12—Pavonia Yacht Club, Jersey City, N. J.
Sept. 18—Detroit Motor Boat Club. Cruise to Wallaceburg.
Sept. 18—Duxbury Yacht Club. Races.
Sept. 18—Miamogue Yacht Club, Bridgeport, Conn. Races.
Sept. 19—Cleveland Power Boat Club. Club Races.
Sept. 19—South Bay Yacht Club, San Jose, Cal. Races.
Sept. 25—Detroit Motor Boat Club. Club Race.
Sept. 25 to Oct. 2—Hudson-Fulton Celebration Races at New York.

October

Oct. 3-9—Hudson-Fulton Celebration Races at Newburgh and Albany.
Oct. 19—Cleveland Power Boat Club. Club races.
Oct. 10—South Bay Yacht Club, San Jose, Cal. Races.

Talks With Our Naval Architects.

No. 1.—Clinton H. Crane.

MR. CLINTON H. CRANE, of New York City, is a graduate of Harvard and the University of Glasgow, and has been a partner in the firm of Tams, Lemoine & Crane for the past ten years. One of the best known vessels designed by him during that time is the Aloha, the present flagship of the New York Yacht Club. Also the Endymion, former holder of the trans-Atlantic sailing yacht record; the Dervish, which was winner in her class race to Bermuda; the steam yachts Rambler, Noma, Rheclair, Vanadis, etc., and the racing motor boats Vingt-et-un, Challenger, Dixie I, II, and III, winners and holders of the international challenge cup for motor boats. In discussing the development of motor boat racing with our representative, Mr. Crane said:

"Motor boat racing began with the application to marine propulsion of the light weight gasoline engines used for automobiles. The development of this type of motor gave a horse power for less weight than had ever before been accomplished, and made it possible to obtain hitherto impossible speeds on the water. At first there was a tremendous interest in this type of boat, largely fostered, it is true, by the automobile manufacturers as a new means of advertising; in fact, the names of the greater number of these racing boats show conclusively the purpose for which they were built—Mercedes up to all sorts of numbers, Fiats, Panhards, Simplexes, etc.

"The great expense and the small return in point of view of fun so far as the amateurs are concerned very largely confined the racing to these professionals. At the present time, in both this country and Europe, it is possible to count the amateurs who are active in the game on the fingers of one hand.

"As these boats have increased in speed the expense has still farther increased, the present limit probably having been reached with the Wolseley-Siddeley at a cost of in the neighborhood of $40,000. This for a 50 foot boat good for nothing but racing is enough to discourage most persons. With the extra cost of labor and material in this country to compete with this boat on anything like an even basis of power would require the expenditure of at least $50,000, and it was in view of this very great expense that I have endeavored to perfect the type of boat which accomplishes its great speed by refinement of detail rather than by excessive power. Dixie, with her 250 h.p. against the 400 h.p. Wolseley-Siddeley of last year was able to win, but with 400 h.p. we could have done considerably better than we did with 250. In the case of the present Wolseley-Siddeley it must not be lost sight of that she is 50 feet as against Dixie's 40 feet; and the fact that no English boat is coming over to race for the trophy this summer seems to be conclusive proof that so far they have not been able to develop a 40-footer with which they have any hope of beating the present Dixie.

Clinton H. Crane, Naval Architect.

"It is true that there is a great deal of interest in racing on the St. Lawrence and on some of the Western rivers, but these boats are of comparatively low power and speed. On the St. Lawrence motor boat racing is popular because there is practically no opportunity for any other form of sport, while in the West I understand that the sport is largely promoted by the activity of local motor and boat builders.

"My ideas on the subject of the future of motor boat racing are rather pessimistic. I believe that in order to make the racing a success we have got to limit power as well as length, just as we do in our sailing races in order to keep things in proper proportions. But, even at the best, there is not sufficient element of chance in motor boat racing to make the sport a thoroughly attractive one. In the sailing race you are not beaten until you cross the finish line, but in a motor boat race if you are behind the only thing that can make you win is a mishap to your competitor."

The Dixie III, successor to the winner of the Harmsworth trophy.

The St. Louis P. B. A. fleet in Middle Lock above Keokuk, Ia.

Cruising and Racing on the Mississippi

The Cruise of the St. Louis Power Boat Association to Rock Island and Return, and the Annual Regatta of M. V. P. B. A. at Burlington, Iowa.

By E. Percy Noel.
(Photographs by Author.)

FATHER of Waters—*Mississippi* in the Indian tongue of centuries ago—is a mighty river. For the greater part of its course it is a swirling, turbulent stream at certain seasons. To keep the rushing waters in a navigable channel it is lined with dikes, to avoid which the cruising boatman must carefully follow hundreds of light posts and day marks.

When the St. Louis Power Boat Association planned its annual cruise this year, it sought to avoid up-stream current bucking as much as possible, and to do so arranged a detour by the more placid Illinois river and the Hennepin canal, to reach Rock Island, Ill., the objective point. But Fate ruled otherwise.

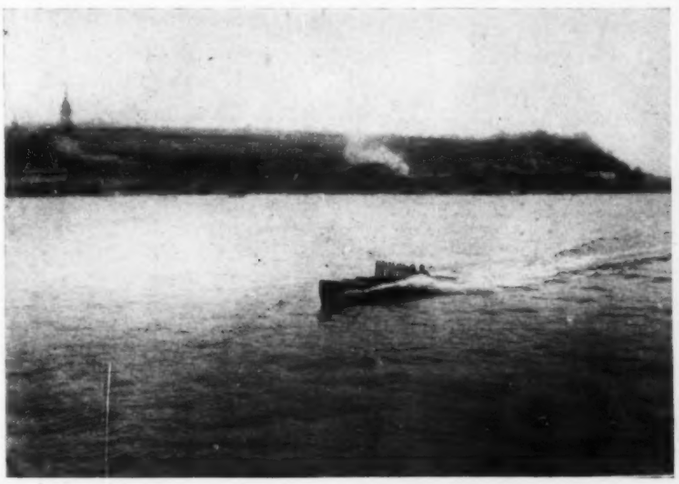
Heavy rains from the north burst the newly built canal in several places, leaving not enough water for boats drawing only three feet. Perhaps it was a disguised blessing. Certainly it made it possible for the Mississippi Valley, from St. Louis to the tri-cities of Rock Island, Moline, Ills., and Davenport, Ia., to witness a convincing demonstration of the reliability of the gasoline motor boat, for the St. Louis Power Boat Association fleet, which for the entire distance numbered eight boats, and to Burlington, Ia., more than twice that number, made long runs to scheduled points daily, arriving according to program with scarcely a consequential mishap.

The Valley saw the battle with the current and understood. Factories paused in their busy grind to give their employees a chance to see the fleet in up-stream action, and the motor boatmen along the way celebrated each stage of the victorious cruise with the fitting ceremony of brass bands and open arms.

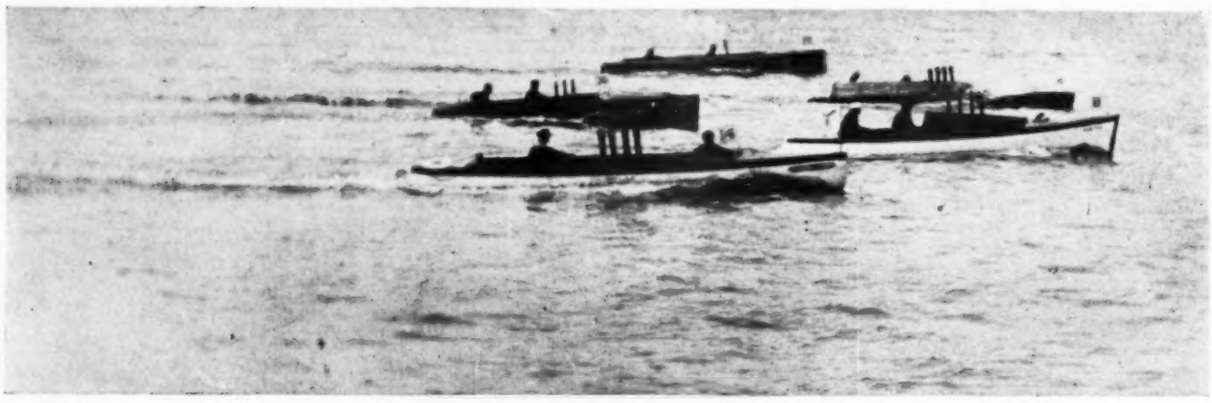
It was a signal effort, indeed, for these Mississippi river craft are not sturdy lake or ocean-going boats. Few of the cruisers were built to stand even the buffeting of "floaters," as drifting logs are called, and they were always in danger of twisting lighter drift about their propellers. Two or three of the craft were regulation cruisers of the glass cabin type; the others had only canopy tops, while some were long narrow speed-abouts with glass fronts and half-cabins at best.

Half-way to Rock Island, the current of the river ran at six miles an hour and on account of heavy rains, which later raised the river to flood level, there was much drift to be avoided; on the other half of the route the water slipped southward at four or five miles an hour, and there were eddies and whirlpools in places. Despite these obstacles and hazards a full-cabin cruiser with four aboard, towed a three-room houseboat, and arrived each night at the scheduled stopping place. One day the motor of this boat turned steadily for nearly fifteen hours. This was on the hardest run of the cruise, 72 miles by the Light Book and fully 80 by actual running, including the three locks of the canal from Keokuk and the rapids above it.

The complete schedule of the cruise was as follows: Saturday afternoon, June 26, St. Louis to Grafton, 47 miles; Sunday, lay-over at Grafton to allow members to hunt and fish in the Illinois river district; Monday, 68 miles to Louisiana, Mo. On Tuesday, an easy run of 46 miles to Quincy, Ill., and another pleasant turn the next day to Ft. Madison, Ia. Then the long pull to Muscatine, Ia., 72 miles of current bucking, and on the day following a half-day run to Rock Island, Ill., 27 miles.



Lamb IV.—A many times winner.



The start of the 26-footers, Sabula leading.

To the 319 Light Book miles add ten per cent and you have figures close to the actual run northwards, some 350 miles.

After a Fouth of July celebration at Rock Island with which a storm interfered but slightly, the St. Louis boatmen started down stream on Sunday afternoon for Burlington, Ia., their fleet being joined by a hundred more boats from the tri-cities, Bellevue, Ia., and other up-river points. Boats came up from Burlington to meet the visitors, but the formation was not good. A wind blowing upstream made the Mississippi so choppy that many of the smaller open craft were compelled to put in to the shore to bail out the water. Over the bows of the faster boats the spray flew in sheets, and the pilots were drenched many times over. It was the beginning of the great rain, through which no sun glimmered from Sunday evening until Wednesday afternoon, the persistent, despairful rain which practically ruined the regatta of the Mississippi Valley Power Boat Association, on July 5 and 6, and gave not one ray of sunlight during the stay of the visiting boatmen, some 200 in number.

In addition to the unfavorable weather conditions, the regatta was marred by a remarkable series of accidents to some of the prominent boats entered for the races. No less than seven of the racing boats built especially for this regatta were disabled a few days before the opening of the meeting.

The Independence II, owned by Edward Koenig, of St. Louis, while on the way to Burlington in tow of the Columbia, hit a log and smashed her bow. She had to lay up.

The Petite, owned by C. W. Dow of Davenport, hit a log soon after leaving Davenport and sank. Mr. and Mrs. Dow were aboard and were picked up by other launches.

The Mascot, the new 26-foot boat of Ernest Corsepius of Ft. Madison, failed to arrive. On a trial trip the engine broke down and it was impossible to repair the damage in time for the races. The Minnie C. III, of Ft. Madison, was also withdrawn, as her motor was not completed in time.

The Red Top II, a new boat built by W. G. Huey of Bellevue, broke a crank shaft and could not proceed to Burlington.

The Twin Sister I, owned by Frank Zinnel of Savanna, Ill., and the Twin Sister II, owned by F. J. Stransky of Savanna, were both withdrawn, as they broke down on their trial trips.

The Niagara II, owned by Schermer Bros. of Muscatine, was also damaged by an accident to the engine.

The programme for the two days racing was as follows:

Monday, July 5—Half cabin cruisers, 15 miles; novelty race, slowest boat winning, one-eighth mile and return; backward race, one-eighth mile and return; 26 feet and under, 10 miles; 36 feet and under, 10 miles; free-for-all, 20 miles.

Tuesday, July 6—Full cabin cruisers, 30 miles; 26 feet over all and under, 10 miles; 22 feet and under, 10 miles; speed trial against time, one mile; speed and endurance race, 30 miles, for a sterling silver trophy.

The Lamb IV of Clinton, Iowa, won the honors in the first day's racing, capturing the 32 and 36 foot class racers and the free-for-all. After much delay on account of the heavy rain, the first race of the day was started at noon. It was the ten-mile event for the 32 foot boats, and was won by the Lamb IV in 25:42½. The Sabula of Bellevue, Ill., was second and Blanch B., of Burlington, third.

The Meteor of St. Louis easily won the cabin cruiser ten-mile race in 1:00:15, the La Tosca of St. Louis being second. The Doodle Bug, a St. Louis craft, won the slow race by a large margin, the Water Wagon of Burlington, being second and the Iona of Rock Island third. The Ella of Burlington was the only starter in the backward race. In the 26 foot class the Teaser of Quincy, won in 24:00. The Planet of Muscatine, was second; Jimmie June, Muscatine, third; Sabula, Bellevue, fourth, and Mosquito, Bellevue, fifth.

In the 36 foot class the Lamb IV of Clinton, won in 22:40. The Teaser of Quincy, was second, and Red Top of Bellevue, third.

The big race of the day was the free-for-all, twenty miles, which started late. The Lamb IV won in 46:20, the Red Top second, and the Planet third. The display of fireworks scheduled for the evening was postponed on account of the rain.

On the second day the races were run as announced, but much of the time in a drizzling rain. The full-cabin cruiser race resulted in a dispute. The Sparks II, the Naldnah and the Comet, all of St. Louis, entered. A disagreement arose over the Comet, the others denying she was a full-cabin cruiser. The judges decided she was, and the race was started. The Sparks and Naldnah withdrew and filed a protest.

The M. V. of St. Louis walked away from the others in the 20-foot class ten-mile race,

The twelve cylinder, 220 h. p. motor of Lamb IV.

Walter Beauvais in his record breaking 20-footer.

making the course in 31:14. The Judgey of Bellevue was second.

The 22-foot class, ten miles, was won by the Mosquito of Clinton, in 31:10; the Comanche of St. Louis, was second, and the Ethel of Muscatine, third. In the free-for-all, one mile against time, the Lamb IV of Clinton, won in 2:00; the Red Top of Bellevue, was second, and the Planet of Muscatine third.

Eight or ten other St. Louis boats had joined the fleet at Burlington, and at intervals on Wednesday they departed in the rain. They began to arrive in St. Louis, Friday morning. The flood water was coming and sometimes the speed of the boats was thrilling. but all went through in safety.

For the success of the cruise, in point of numbers at least, the trouble with the Hennepin canal was fatal, for thirty-nine boats, by actual count, were to start until the news came that the canal was not available. Perhaps it was more this cause than the current or drift which reduced this number, and left only eight boats, or nine including the house boat, to make the entire run. Others lagged behind after Grafton, Ill., while a few started late from St. Louis and Alton, Ill., and joined the others at Burlington for the regatta. But the real survivors of the cruise were those who enjoyed it best.

Lamb IV and Planet alongside the judges' boat. They were the closest contenders and averaged nearly 30 miles an hour.

The speedabout Red Bird, of Vice-Commodore P. D. Barbour, the Comet and houseboat Earle of Rear Commodore Albert Jacobs; the Katydid of Adolph Moll, the Naldnah of Eugene Handlan, the Mercury of Eugene Ferrenbach, the Crescent of William Velde, and the Gypsy of Doctor Tarr—these were the boats and men who made the stops on schedule, tieing up within hailing distance every night, discussing the day's run, mingling together in sympathetic good fellowship—getting the "fun out of it"; each boat ready to help another; brothers in the good sport of motor boat cruising.

Of grumbling, "knocking," verbal back-firing, there was none. Who cared that the commodore on his flagship Harriet chose to forfeit his place at the head of the squadron, to loll along in runs of his choosing, to fish and hunt and play as he and his shipmates pleased? There were two other commodores with the real fleet, and they were doing their duty and getting the honors that the clubs of Ft. Madison, Muscatine and Rock Island prepared for the visitors. The Celtric of the Fatch brothers, which broke a crank-shaft on the way to Ft. Madison, was the only boat which was very much missed, and these two enthusiastic boatmen made heroic efforts with telephone and telegraph to affect repairs in time to catch up with the schedule. And the running did not seem so difficult as the days went by, even if sometimes it did take a long time to reach port. It became only a matter of retarded speed, speed that averaged six or seven miles an hour for the whole fleet. Besides, there was always the pleasing prospect of a speedy trip southward with the current.

No matter if the days on land were boiling hot—and some there were—it was always fairly cool on the water with the motor purring, throbbing, or rattling as the case might be. On either side the scenery changed slowly; often there was majestic beauty of the bluffs; sometimes the dense green copse, contrasting vividly with the baby blue sky and the cotton puffs of clouds.

But the evening runs when the sun was putting on its nightie of clouds, ready to drop out of sight beneath the bed clothes, are those which will be remembered longest; the cool of twilight, with the sweet odors of Nature in the evening breeze; the long, quivering shadows on the dark water, and sometimes the great wondrous sun a ball of livid fire through the darkened green of hill-top trees, and there is over the waters a peace and quiet calm that the song of the motors does not disturb.

Following the regatta the third annual business meeting of the Mississippi Valley Power Boat Association was held, with representatives of the following clubs present: Bellevue, Burlington, Cedar Rapids, Clinton, Davenport, Fort Madison, Peoria (Illinois Valley Yacht Club), Rock Island (Island City Motor Boat Club), Kansas City, Keokuk, Muscatine, St. Charles, St. Louis Power Boat Association, and the South Side Club of St. Louis. The association elected the following officers for the coming year: Pres., Dr. J. W. Dixon, of Burlington; 1st vice-pres., W. F. Bishop, of Muscatine, Ia.; 2nd vice-pres., W. H. Gosch, of Davenport, Ia.; sec. R. H. Combes, of St. Louis, Mo. (retiring president); treas., Dr. Hobbs, of Fort Madison, Ia. The executive committee was named as follows: C. P. Hanley, chairman; Thomas H. Webb, and Fred J. Swain.

Before the start of the 26-footers. Nine crossed the line in pouring rain.

The Prize Contest in Questions and Answers.

Still More Questions—Still More Prizes

SHE'S under way! The response of the readers of the New MOTOR BOATING is indeed very gratifying. They helped us to launch this new department, they fitted her out with good material and now she is under way—full speed ahead—on a straight course to Reader's Satisfaction. But her tanks must be kept filled, and the fuel must come from the same source as did that which is now propelling her—from you, the reader. There are more questions for September, and of course—more prizes.

READ the general conditions again:—We will give prizes each month to those who send in the best answers to the questions printed in the issue of the month before, and in order that the department may be helpful to the greatest possible extent, we will give prizes for the best and most practical questions submitted in the next following competition. There will be three questions in each contest each month, and therefore three prizes each, for questions and answers.

For the September contest we offer $10 in cash for each of the best answers to the questions given below, and $2.00 in cash for each of the best and most practical questions submitted for the next contest. Answers should not be more than 500 words long, although we do not insist on this limit if the quality of the answer merits greater length.

THE QUESTIONS FOR THE NEXT ISSUE ARE THESE:

1.—**What life saving equipment is desirable for an ordinary motor boat and how should it be carried?**

Suggested by C. Petersen, Brooklyn, N. Y.

2.—**Which is the best location for the engine in a cruising motor boat of 40 feet or less; forward, amidships or aft?**

Suggested by L. Kromholz, New York City.

3.—**What method of discharging the exhaust in motor boats is most efficient in reducing the noise and odor without impairing the power of the engine or interfering with the interior arrangement of the boat?**

Suggested by N. L. Skene, Boston, Mass.

Answers addressed to the Editor of MOTOR BOATING, 2 Duane Street, New York, must be (*a*) in our hands on or before August 15th, (*b*) not over 500 words long, (*c*) written on one side of paper only, (*d*) accompanied by the senders' names and addresses. (Names will be withheld and initials or pseudonyms used if this is desired.)

Questions for the contest should reach us on or before the 15th of August.

THE PRIZES ARE:

For the best answer to each of the three questions given above, $10 in cash. (There are three prizes, one for each question and a contestant need send in an answer to but one, if he does not care to answer all.)

For each of the suggested questions selected for use in the next contest, $2 in cash.

For all non-prize-winning answers published we will pay space rates.

To all who send in answers, prize winners excepted, we will give a copy of Goldie's Book "From Novice to Pilot," a practical treatise by a practical man on navigation and the operation of a motor boat.

Answers to Questions in July Issue.

Should the Gasoline Feed Pipe Between the Tank and Carbureter be Run Inside or Outside the Hull?

The Prize Winning Answer.

ALL the danger of gasoline leakage, practically, is at the connections, and these are necessarily inside the boat in any event. There is so slight chance of damage or leakage if proper piping is used in the straight run of pipe that to carry it outside the hull is only to expose it to more or less danger of accident and consequent disablement, without any corresponding benefit.

The real source of danger is in an installation which does not provide for taking up vibration without injury to joints, connections, cocks, &c. If the feed pipe be of drawn copper (which is much the best), an S loop should be put in or a short coil, at each end. Then if the various fittings be properly made up with unions at each end, and all screwed connections properly shellacked when installed, no difficulty need be anticipated.

The gasoline supply, in my opinion, is the most important part of the outfit, both on the score of safety and of reliability. If the pipe be too small, great trouble results from clogging and an outboard feed pipe seems to me to serve no useful purpose, but does add to the expense and time of making repairs.

An outboard connection which should always be made, however, is that *to the tank.* The tank should be permanently and securely connected to the deck plate by a pipe threaded at each end and shellacked. Then if there is any gasoline slopped in filling the tank—and there usually is—it will flow off the deck. The practice of having a large deck plate and reaching through it to unscrew the tank cap is a decidedly bad one. HUNTINGTON.

No Advantage Outside.

THIS question is very often brought up, but generally by persons thinking of having a boat, who have had no previous experience and do have a fear of gasoline fires. Personally I can see no advantage of having the pipe outside the hull where it is more exposed to danger of breaking or being crushed by grounding the boat and having extra holes in the bottom for leakage of water, and unless there is a flexible connection between where the pipe comes through the hull and connects with the carbureter the vibration will soon make a gasoline leak in a bad place to repair without grounding it.

On the other hand a flexible copper tube (and that is the only satisfactory thing to use), run inside the hull with the connections well soldered or brazed on and the threaded connections well made up with shellac, having a valve and union at each end and a good gauze strainer that can be cleaned without taking the pipe apart (there are several good ones on the market now) will not cause the owner any trouble and is equally as safe and far more easily installed and taken care of than one carried outside the hull.

JOHN W. RANKIN, Camden, Me.

"Inside—By All Means."

THE writer has made a large number of installations both on small and large boats and has been very successful in the use of block tin pipe. We use ¼-in. heavy walled piping. This will readily screw into an ⅛-in. brass union. We then carefully solder this union to the pipe and on the other end of the union use a gasoline stop-cock, which, in turn screws into the tank at one end, and, after putting similar fittings on the engine end of the pipe, lead this into the carbureter.

This pipe may readily be taken out by disconnecting the unions at each end and may be bent around corners without injury.

It will also resist the corrosive effect which sometimes very strongly occurs where a brass or lead pipe lies against an oak rib. This pipe is sufficiently strong to be walked upon without damage, and will outlast the engine or boat.

In soldering the unions great care must be taken, as the melting point of the block tin is very near that of the solder, but if carefully done, a splendid joint can be made.

With the pipe carried on the outside of the boat, there is always danger of its being carried away. We know of a boat which was thus disabled far at sea and the owner's wife was compelled to put up her diamonds, as security for the towage bill, with the captain of the tug which happened along and towed them to port.

The placing of the pipe on the outside does not eliminate any of the danger of leakage, as the principal danger points, namely, the joints of the piping, are still inside the boat, and with block tin pipe, as suggested above, the number of joints are reduced to a minimum, and there need be no fear that the pipe will leak.

Lead pipe we have known to become porous after a short use with gasoline, but the block tin never.

W. J. FORBES, Boston, Mass.

Recommends Both Ways.

I WOULD say both ways. For general use run a brass pipe outside with a cock at both the tank and carbureter so that in case of an accident this pipe can be entirely cut out of use. For inside piping use a flexible copper pipe which can be easily bent over timbers or around any corners. This pipe should have two cocks, as the outside pipe. In the event of having to use the inside pipe, which is really an emergency pipe, on coming to anchor shut off this pipe at the tank and run your engine 'till it stops. In this way all the gasoline will be drawn off and the small amount, if any, that is left can do no harm if there is a leak. If the builder does not wish to go to the extra cost of double piping by all means pipe outside. If only one pipe is used and a leak should occur it is far better to have it in the sea than inside your boat. In the event of the double piping being used the owner will be more than repaid for the extra outlay by the fact that no matter what happens you are sure of getting home.

SIGMA.

Where Most Leaks Come.

FEED pipes in most cases should be inside the hull; if good brass pipe is used and all joints are shellacked and well put together there will be no danger of leaks. Most leaks are close to the carbureter and are caused by vibration; there will seldom be any leaks at the tank end of the pipe unless the tank is not properly fastened and works when in a seaway.

C. J. FOULKS, Corolla, N. C.

Advocates Outboard Arrangement.

THE writer thinks it is simply a difference of opinion. An owner may favor the inside method because it is so in his boat, and has never given him any trouble, but undoubtedly the outside way is the more satisfactory in any case. Where there is a distance of ten feet or more between the tank and the engine the pipe should cut through the planking under the tank run along the keel and garboard, come up near the engine where the gasoline should be pumped to a 5 gallon (or smaller) cylindrical tank (fitted with a gauge) fastened to carlins above the engine, and down to the carbureter by a steady and even gravity feed no matter how the boat is rolling and pitching.

The objection to pressure feed is the strain on the tank which continually weakens the seams. With the pipe on the inside under the flooring (on top of the floors) it is in danger of being bent or broken when repairs are being made to the shaft or interior of the hull, while if on the outside the pipe has a long straight run, and does not have to be suspended from frame to frame as in the former method.

L. KROMHOLZ, New York City.

What is the Best Way to Install the Battery and Spark Coil in an Open Boat?

The Prize Winning Answer.

FIND a box somewhat larger than is necessary to hold the one or two batteries (not cells) which you desire to use and with room in one end to contain the spark coil. Withdraw all the nails and replace with copper, brass or galvanized nails or screws. Do not use a box with dovetailed joints. If you cannot find a box to suit you, make one of suitable pieces of board, but be sure to put a good coat of shellac wherever there is a joint. Paint the whole box, inside and out, being careful to work the paint thoroughly into each joint.

Place the batteries in the box and, if there are two rows of cells, put a partition down the center and place a cross piece in the box to which the end of the partition has just been attached. Have the partition an inch or two below the top of the cells that they may be readily withdrawn and replaced. Raise the cells slightly by attaching a strip of wood about a half inch high by one inch wide to the floor of the box. Pour in around all the cells paraffine, until it comes about half way up their sides, if using dry cells.

Attach the spark coil to the inside of the end of the box and have it high enough up to adjust easily, if it is for high tension ignition.

Cover the top edge of the four sides of the box with thin sheet rubber, tacked down with copper tacks. Tack a strip of the same kind of rubber all around the under side of the top, but be careful not to get the heads of the tacks opposite those in the box. Attach the top to the box before putting on the rubber. Bore holes in the top, opposite the bolts, and screw the top down with thumbscrews.

Bore the necessary holes in the side or end of the box for the wires, and wrap each wire with electrical tape just inside the hole. Then pull the wire from the outside till the tape fills the hole snugly.

Two or four strips of metal screwed to the outside of box with projecting ends, bent or straight, with screw holes in them will give the means of attaching the box well up on the side of the hull, close to the motor and away from the bilge,

If you must put the battery box on the floor, put two or three strips, at least two inches thick, across the bottom of the box to raise it that much from the flooring.

Have the top of the box easy to remove or you will never trouble to sun your batteries, and have the top fit snugly on the double thickness of rubber, when closed, or it will carry more sea-water than the cells will put up with.

W. H. H., Jr., North Haven, Me.

A Removable Box.

TO guard against most of the accidents which happen to the batteries and coils on an open boat, I have devised for my own use a small box, which contains besides the coil, a set of four dry cells which box is set in a locker alongside my engine, well above the water line, so that the boat would be practically filled before the water could get at the contents of the box. The box is removed when the boat is at her mooring; has three terminals, one being at the end of the circuit from the battery, one the other end of circuit through the coil which forms the ground to engine bed, the other terminal is for the magneto, and connects to the same terminal of coil as the battery wire does.

Of course one wire leads from the battery connection to the switch which is on the outside of locker alongside of battery box and close to engine. The box is connected in circuit by ordinary battery terminal screws, and the ease with which the whole outfit can be put in commission, has been the envy of my boatmen friends.

As an extra protection against spray or rain a waterproof cover could be put around the box, but as there are already two covers over the box (one the box lid, the other the locker cover), I have never found it necessary as I have never found a drop of water in my battery box. Still to guard against short circuiting of the battery through the effects of dampness, a sheet of corrugated rubber is placed in the bottom of my box and small pieces of rubber placed where the batteries touch each other.

During my three years' ownership of a boat, I have tried many methods, and have found this to give best results, as all wires are very short (which is very important) and can be easily traced, and are so placed as to be absolutely out of the way, and not a cause for tripping when moving about in the boat.

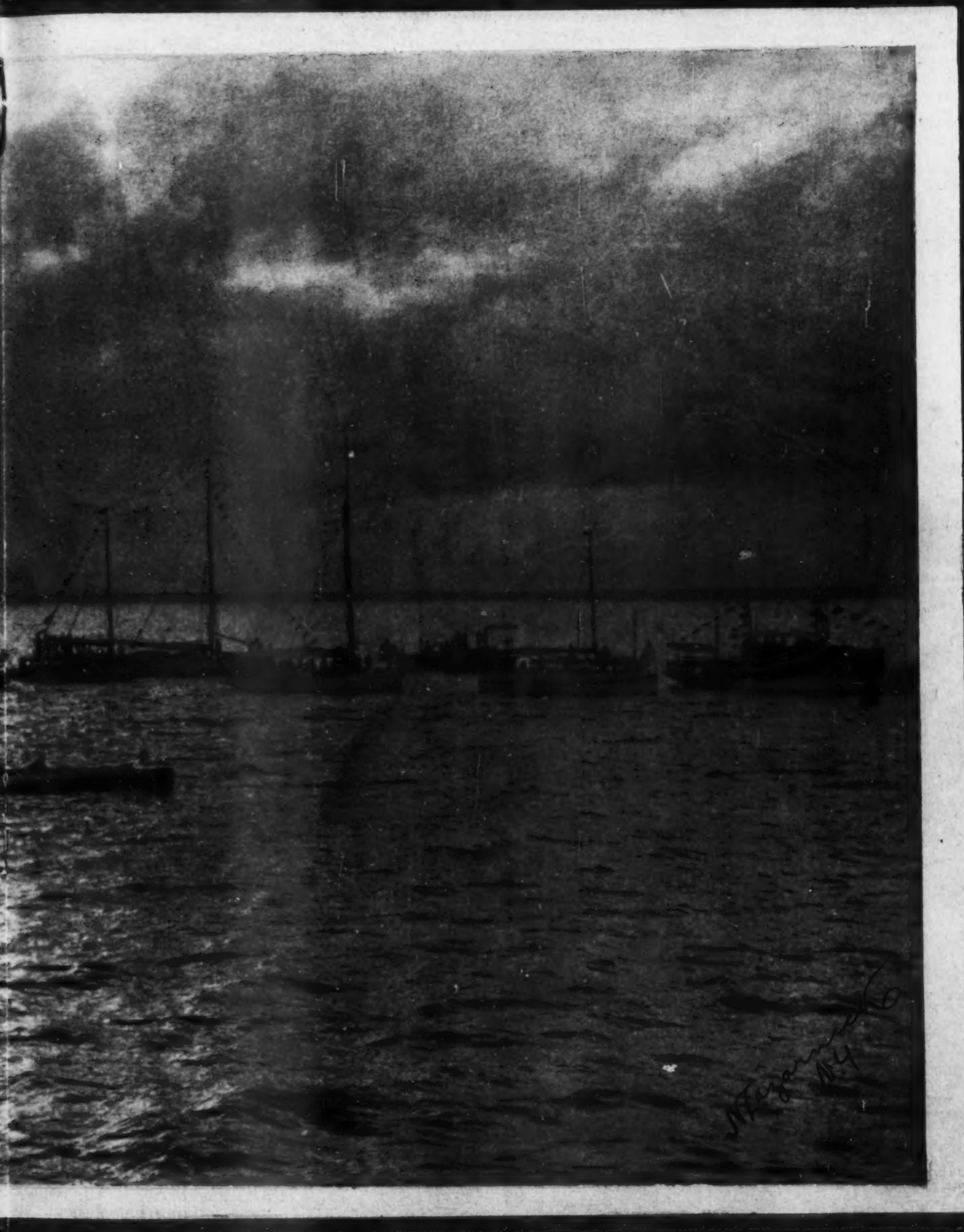
HENRY ÜBELHÖR, New York City.

Hangs Them Under The Seat.

WHAT is the best way to install the battery and spark coil in an open boat? was the question I put to myself a few weeks ago when I launched my open dory. Going as I do in any weather and having my little locker room taken up with whistle, bell, horn and such things it was pretty hard to find a place where the batteries would not get wet somehow or other. Now I can leave them in the boat without fear of their getting wet.

I made a stout tight box, large enough to hold battery and coil and gave it a coat of asphaltum dissolved in turpentine both inside and outside, making it practically watertight, drilled small holes for the wiring and cut a rubber blanket a little larger than the opening in the top. I then cut away a portion of the fore and aft seats alongside of the engine, a little longer than the box containing the battery. I then cut a piece of board the width of the seat and about six inches longer than the piece I had cut out of the seat. To this piece of board I screwed my battery box with the rubber blanket over the top and after bevelling the ends screwed the board on top of the seat where I had cut the piece away. My battery and coil are now hanging under the seat out of the way and there is no possible chance of getting them wet. Having them close to the en-

(*Continued on page* 34.)



Motor Boating

(*Continued from page 31.*)

gine has also the advantage of very short wiring. The switch is screwed onto the box containing the batteries and protected by a rubber flap.

CHARLES R. VOGT, Coney Island, N. Y.

Lime to Absorb Moisture.

MAKE a battery box of galvanized iron that will hold twelve dry cells, run in hot paraffine in bottom to the depth of one inch, set in cells without removing paper cases. Then fill two or three inches deep with hot paraffine. Connect your cells six in series and use alternately one hour at at a time as they will last at least twenty-five per cent longer than if only six are used for coil. I have a galvanized box made large enough to hold coil and a lump of lime the size of a hen's egg. The lime will absorb all moisture and prevent rust of parts. I am employed by U. S. Government on an open boat out in all kinds of weather and have never had to renew a coil and my batteries give so many more miles of service that they are equipping all of the other boats in this way, and covered boats as well. I have run four and five months on twelve Red Seal batteries in constant use every day.

ENGINEER, Sterling, Ill.

Suggests the Use of Glass Jars.

I THINK that the best way to install the battery and spark coil in an open boat is to place it as near the engine as practicable and raised considerably above the floor of the boat. These batteries should be insulated as well as possible as I do not believe that the insulation can be too good. My plan would be to place each cell and coil in a glass jar and the jars packed in excelsior or other packing material to prevent breakage, and coil jar inverted or sealed up. This arrangement would be of advantage in case the battery should give out at any time, provided you carried a jar or bottle of sal-ammoniac solution which could be poured into the battery glass jars and this would allow you to get home on the cells as it will run a considerable time before it would be entirely used up. A new battery would have to be procured at once, but this would be a warning.

CHAS. E. BERGBORN, Fishers Island, N. Y.

Recommends Short Wires, Etc.

BATTERIES, either of the dry cell or storage type, should be so placed that they are well above and out of reach of dampness resulting from water in the bilge of a boat. Where practical, they should be placed in a wooden or metal box securely packed with newspaper, excelsior or melted paraffine. This box may be attached to side of boat well up under the coaming, or else to the bulkhead, and the box can be further protected by a strip of galvanized iron bent to form and with crimp to hold it in place. Thus the cover can be readily removed and access had to the batteries. The box should be placed alongside of or in back of the engine, so that the heat from the engine while running will be carried to it and thus dry out any moisture that may have reached it. The shorter the wires leading to the switch, coil and timer, the better, as any fault in insulation or connections can be more readily located. The separate coil contained in a heat and waterproof case, attached directly to the cylinder to which it furnishes a spark, is a long step in the right direction, as then only 12 or 18 inches of secondary cable are needed to connect the coil to its own spark plug. But where the ordinary box or dash type of coil is used, this can be protected in the same manner as the battery box and little, if any trouble, will be experienced. As before stated all the ignition equipment, such as batteries, coils and timer should be brought as close to each other as possible so that the wiring will be short, and if primary and secondary cables are further protected by rubber hose or tubing well wrapped at the ends with insulating tape to prevent the entrance of water or oil, one can go through an entire boating season with only the renewal of batteries and spark plugs and an occasional adjustment of tremblers and cleaning of contact points on the coil as the sum total of ignition troubles. While I have spoken of the "jump spark" system these remarks, in the main, cover the care of "make and break" systems also.

M. D. GANNON, Sewickley, Pa.

Suggest a Novel and Striking Event or Competition for the Program of a Water Carnival or Club Regatta.

The Prize Winning Answer.

AS Chairman of the Regatta Committee of the Cottage Park Yacht Club at Winthrop, Mass., the writer has arranged and carried out what he has called "Maneuver Contests," which have proven very successful and interesting from point of view of both spectators and contestants.

Any size motor boat may compete which can be readily handled by one man, this being the limit of the crew.

The launches are anchored in a line a short distance from the club floats. The contestants are arranged beside their tenders, which may be on the floats or alongside. At a given signal they start, row to their launches, get aboard, make fast the tender, get their anchor in and start the engine. The contestants are given points in the order of completing this manouver.

The launches are then again started in line, and, at a given signal contestants stop, anchor, get in their tenders, row completely around their launches, without touching them, get aboard at the point of leaving, make fast the tenders, get anchors and start engines. Points are again given as before.

Next start their launches in line, and, at a given signal, and at full speed without stopping, cast loose the tenders; they then go back, pick them up and make them fast. This completes another manouver for which points are given.

Next each contestant in turn makes a landing at a float in such a position as to most easily discharge or embark passengers. Quickness and ease of handling to count in favor, and bumping against the float or creating a great disturbance in the water to count against the contestant.

W. J. FORBES, Boston, Mass.

A Control Test.

THE question of boat control is assuming more and more importance because of its close relation to the safety of boats and boatmen. There is much room for skill in this department of the sport, and there are many devices on the market, including reversing clutches, reversing propellers and reversing engines, whose makers claim particular excellence in this matter of boat control.

To test the value of these claims, as well as individual skill, some such events as the following would be enlightening as well as interesting to spectators and contestants:

STOPPING.

At the finish of a 100 yards course arrange two buoys eight or ten feet apart supporting two cords at right angles to the course and about one foot apart.

Send each boat over the course to these buoys and have it touch the first cord with its bow and back away without touching the other cord or either buoy.

The boat touching the first cord in the fastest time would win, provided it fulfilled the above conditions.

REVERSING.

Use the same course as for the stopping test.

Each boat should go over the course, touch the first cord without touching the second cord or either buoy, and return to starting point backwards.

The fastest time wins.

SPEED CONTROLLING.

Lay out with buoys and cords a winding and irregular course of not much greater width than that of the largest boat entered. The best time over the course without touching cords or supports would win.

It is evident that it would be necessary to control the speed of the boat in order to avoid touching the cords when making turns.

TURNING.

1. Lay out an approximate circle with buoys and cords of a diameter some ten feet larger than the boats entered. The contest to consist of turning one's boat completely around within the circle without its touching the cords or buoys.

The fastest time wins.

2. Touch a buoy with bow then turn completely around and touch buoy with bow again.

The fastest time wins.

COMPARATIVE SPEED.

Lay out a straight course with lines and buoys, and send each boat over it twice, once at high speed, again at low speed. The winner to be the boat whose lowest time in minutes divided by its fastest time in minutes gives the largest quotient.

In all the above events touching any buoy or cord, except the first cord in the stopping and reversing tests, should disqualify the contestant.

Stopping of a motor during any test should also disqualify the contestant.

In the comparative speed test uncoupling the propeller from the motor, or actually stopping the boat should disqualify.

C. H. D., Hopedale, Mass.

Pick Up the Numbers.

PREFERABLY for cabin cruisers, but open boats may be used if impossible to fill the class with the former.

Every entry to be equipped according to Government requirements. Also every boat to be equipped with either a reverse gear or reversible propeller. Two cycle engines reversing not allowed. Each entry to tow a tender propelled by oars, throughout race. Racers to line up, engines not running between judges' boat and a stake boat anchored a sufficient distance off to allow sea room for the number of entries. We will call this stake boat number 1. Starting gun one minute after preparatory gun. Each entry to be provided with a race number. Course a three mile triangle, one mile to a leg.

When preparatory gun is fired, a man stationed on stake boat number 2 will throw overboard small planks or boards, each board bearing a number to correspond with the numbers on racers.

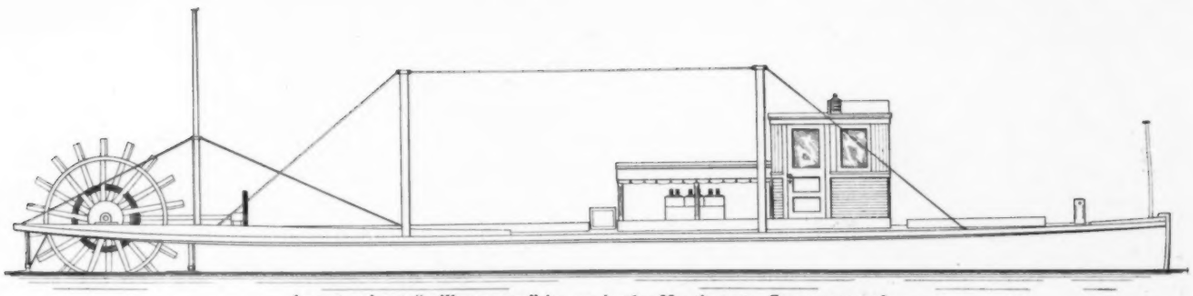
The racers shall proceed to stake boat number 2 and around same (leaving it to port or starboard as may best suit the course, but have that point determined before the start). After turning the racers are to stop with engines running, and one man is to enter the tender towing astern and find and pick up the board bearing the number corresponding to the race number on his boat, return to his boat with it, the boat then proceeding at full speed toward stake boat number 3.

At any time they please after racers have rounded stake boat number 2 the judges are to fire a return gun, when each racer shall turn and make stake boat number 1 by the shortest possible course from wherever they may be at that time.

All boats on the return are to pass between the judge's boat and stake boat number 1, leaving it to port or starboard as may be determined upon before the start, and shall then reverse, and back around stake boat number 1 completely encircling same after which one man is to enter tender and carry the board bearing his number to judge's boat, the first man in with his number being the winner.

Fouling stake boats or other boats shall

(*Continued on page 54.*)



A motor boat "milk wagon," in use in the Northwest. See paragraph.

Business Motor Boats.

New Standard Oil Boat.

A NEW working boat which has just gone into commission for the Standard Oil Company at Norfolk, Va., and will be used to deliver lubricating and other oils to the shipping in Hampton Roads and adjacent waters, is Petrolia No. 4, shown in the illustration at the bottom of the page just as she was receiving her finishing touches at the yard of her builder, the Nilson Yacht Building Company of Baltimore.

Petrolia No. 4, is the fifth boat of that name that the Standard Oil Company has had built within the past six years (Petrolia and Petrolia No. 1 having been destroyed by fire while at Norfolk), and she represents a splendid type for the business in which she will be used. She is 45 feet long on deck, 10 feet beam and four feet depth of hold. Her motive power is an 18 horsepower Standard engine which drives her about 8 miles an hour.

A Launch for Labrador.

A committee of Princeton graduates and under-graduates has purchased, equipped and given a launch to Dr. Grenfell. The launch will be equipped with a complete medical outfit, and is a memorial to the late Dr. A. J. McCosh, of the Presbyterian Hospital, of New York, a graduate of Princeton, and son of the late James McCosh, formerly president of Princeton. Two graduates and five under-graduates started with the launch for Labrador, from New York on July 2.

Motor Boat for Revenue Service.

Among a number of boats recently constructed at Muskegon, Mich., for the Government is a gasoline motor boat, Lieut. William C. Neary, which is destined for duty in the Revenue Service in the Atlantic. It was brought East under its own power.

For Fishing Trips.

Capt. Charles N. Solheim at Great Kills, Staten Island, has built a motor boat which is to be used for fishing trips to the "Banks." The cabin trunk is flush with the forward deck, but is cut away just far enough on each side so that those who want to fish can sit on it and hold their poles over the side of the hull. Twenty will be able to fish at the same time. This boat, which is named Aurora, is 37 feet over all, 35 feet on the waterline, 9 feet beam and 3 feet draught. There are 5 feet 10 inches of headroom in the cabin, and the boat is driven by an 18 h. p. motor. The frames are of oak 2½ inches square, the planking of yellow pine 1⅛ inches. By the arrangement of the cabin trunk, camp chairs and other deck fittings are dispensed with.

A Motor Supply Boat in New England Waters.

Martha's Vineyard is to have a new business enterprise in the gasoline motor boat Eben A. Thatcher. She has been fitted out as a floating ship chandlery and grocery, giving especial attention to the wants of the numerous fleet of vessels that pass through Vineyard Sound, and also supplying motor boats with gasoline. She is about 40 feet long and 15 feet beam, with a comfortable cabin, pilot house and engine room.

In the Lumber Business of the Northwest.

Reports from the Northwest show many gasoline towboats have recently been completed for lumber and shingle firms of Seattle and vicinity. The launches will be used to tow booms and for general towing purposes. The Sonleyette, of the Stetson-Post Mill Company, has the following dimensions: Length, 60 feet, beam 11 feet, and depth 5 feet. It is fitted with an 85 h. p., three-cylinder Union engine, and is able to make 12 miles an hour.

The Hewitt-Lea Mill Company, of Bellevue, on Lake Washington, has just received a 45 foot, 11 foot beam launch which is equipped with a 35 h. p. Union engine and will make 10 miles an hour.

Another such craft is the Alicye, a new 25 h. p. launch delivered to the Batch Lumber Company who will operate a mill at Edmonds. The Poulsbo Shingle Company also has a launch designed for towing purposes. It is 43 feet long and has a beam of 10½ feet, and is equipped with a 25 h. p. Union engine.

Passenger Service in Mexico.

Motor boat passenger service has been introduced on the Vigo Canal from Mexico City to Lake Xochimilco, the trip being made in about three hours.

Petrolia No. 4—She works for the Standard Oil Co.

A Motor Boat "Milk Wagon"

Motor boats are proving of immense advantage in the Northwest as means for conveying milk to those condensors which are situated on the banks of navigable rivers. At Mt. Vernon, Washington, the Pacific Coast Condensed Milk Company has a condensor which is supplied by two large scow-like boats, driven by powerful engines. These boats have almost entirely done away with horses and wagons which used to gather up the daily supply of the big plant. At about one-third of the expense these two boats do the work of 18 or 20 teams, and furthermore cover a radius almost twice as great as was possible under the old conditions. Carnation No. 1, of which an outboard elevation is shown at the top of the page, is one of the big "milk wagons." This boat, which is 66 feet long, 9 feet beam, has a draught of only about 10 inches. She is powered with a 50 h. p. San Francisco Standard, which operates a stern paddle wheel 8 feet wide and 9 feet in diameter with 9 buckets. She was designed by Lee & Brinton, of Seattle.

In Government Service.

Captain Edward Born of Ballard, Washington, has a contract with the government for transporting supplies to Kuskokwin, Nushagak and other distant points in the North Pacific. He will employ a 70 foot motor schooner, the P. J. Abler, in this service.

Motor Boat Replaces Steamer.

The steamboat formerly used by the United States Fish Hatchery at Green Lake, Maine, has been replaced by a motor boat, 28 feet long, 6 feet 6 inches beam and equipped with a 15 h. p. Fairbanks motor. The new boat was built at Sedgwick, Me., by Arthur Sargent and is known as the U. S. Fisheries No. 9.

A Novel Passenger Boat.

A departure in motor boat building was recently completed at Palmer Bros.' yard at Coscob. She is 45 feet over all, and will have a carrying capacity of from 60 to 70 persons. She has been nicknamed the "trolley," because of the arrangement of her seats, which will be crosswise instead of fore and aft, as usual. A running board with railing will stretch from stem to stern on both sides, to allow of easy change of position of passengers. She was built from designs made by her owner, E. B. Morse of Scranton, Pa., for use on a neighboring lake.

Winning the Yachtsmen's Race.

By Edson V. Shock.

ON July 10 at five minutes past six o'clock in the afternoon there was started from the bell buoy off New Inlet, just about six miles below Beach Haven, N. J., the first ocean race for motor boats given by the Yachtsmen's Club of Philadelphia and open to such boats enrolled in any yacht club.

Earlier in the day two other races were started over the same course, one at 10 A. M. for sail boats and one at 2 P. M. for auxiliaries. The difference in the time of the starts was fixed so as to bring the finishes at about the same time, which was a success as the two auxiliaries finished at the same time as the motor boats.

The entries in the motor boat race were: Elizabeth, owned by Commodore John McAvoy, Island Heights Yacht Club; Lady Maud, owned by Dr. C. S. Street, President of the Yachtsmen's Club of Philadelphia; Ilys, owned by J. G. N. Whitaker, of the Yachtsmen's Club of Philadelphia; Alice, owned by Wm. Schoettle of the Yachtsmen's Club of Philadelphia; Mabelle, owned by F. F. Sproul of the Philadelphia Yacht Club, and Chasbea, owned by C. H. Paschall.

The weather was all that could be desired, there being a slight easterly ground swell and a light southeast breeze which held until about 9 P. M., when it died down. The first signal was given at 6 o'clock and the starting gun at 6:05 which sent us off on our journey. The course was from the bell buoy off New Inlet to the Whistler off Atlantic City, thence to the Eastward of Northeast End lightship, thence to Five Fathom Bank lightship, thence to the Whistler at McCray's Shoals, thence to the finish line, a distance of about one hundred nautical miles.

At the crack of the gun we on the Lady Maud were off with only the Larkspur ahead. Being the largest boat in the fleet and having the smallest engine as compared with the size of the boat, we of course expected to be left far behind in a very few minutes, so you can judge of our surprise when we found that there were three others just about as fast, or slow, as we, so we looked for company over the course.

Shortly after the start the Ilys and Elizabeth began to walk out in front and soon opened up quite a lead on the tailenders. The Alice, which has a 25 H.P. motor, tried to follow their example but had all she could do to pass the Larkspur with only half the power. Left by the Ilys and Elizabeth, the rest of the fleet had a fine race to the Whistler off Atlantic City, there being not over half a mile between the first and last boat of our division which was led by Alice with Chasbea second, Larkspur third, Lady Maud fourth and Mabelle last. The length of this run was just seven nautical miles and as we made the buoy in just one hour it showed our speed to be 7 knots or 8:06 miles. As some of the 10-mile boats were only two or three minutes ahead of us, this gave us some encouragement.

On the run down to Northeast End lightship the same relative positions were held except that the Larkspur had some engine trouble and dropped behind us while we were able to gain slightly on Mabelle.

In all motor boat races of this kind there is always a time when you have nothing to do except to watch the scenery and I know of no more interesting place in this respect than the lower New Jersey coast. We passed Atlantic City, Longport, Ocean City, Sea Isle City, Wildwood and all the rest of the summer resorts to Cape May, and it was a pleasing sight to watch the lights appear in the hotels, cottages and the various places of amusement.

The Northeast End lightship has one of the hardest lights on the coast to pick up, it being a fixed white and fixed red. The trouble is that a white light can be seen about twice as far as a red one, and all the time you are running down on it, or think you are, you can never be sure until you see the red. In this race we were not sure of the lightship until close aboard although we had picked up the white light sometime before. Owing to the mishap to Larkspur we had the pleasure of passing the lightship fifth, the Larkspur being sixth and Mabelle last. Our time of passing was 11 P. M.

From the Northeast End to Five Fathom Bank we had the most exciting race during the whole time. The Larkspur's engine was running again in good shape and she was slowly gaining on us and it was a question as to which would get around first. When about a mile off the light vessel we started our searchlight as we desired to round her as closely as possible. We passed so close to her stern that the overhang seemed to be right above our heads. We gave them our number and received in reply the news from the sail or auxiliary boats.

We were able to keep our lead on Larkspur, passing the lightship about two lengths ahead, at 12:27 A. M. Just before reaching the lightship the moon came up welcomed as giving promise of a fine night, as it proved to be. A steamer outward bound from the Delaware capes passed up just about this time and also one passed us bound in. The latter had nearly completed her voyage while the former was just beginning hers—and we were in the middle of ours.

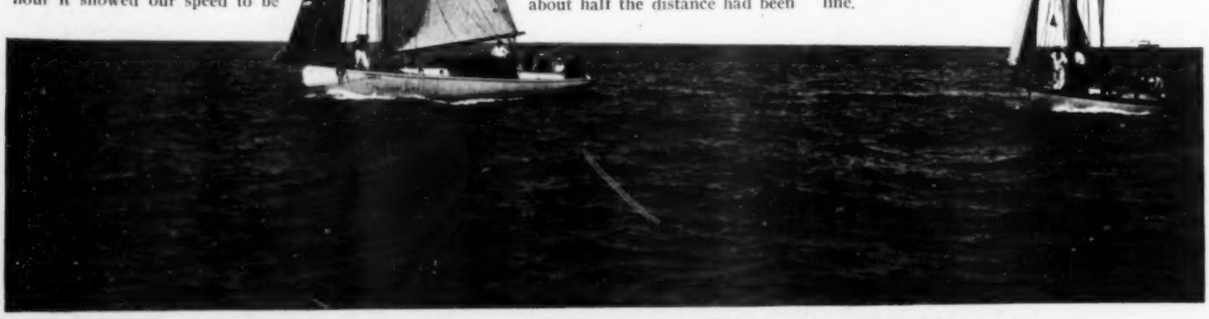
In the run over from the Five Fathom Bank to McCray's Shoals, we experienced rather difficult steering owing to the seas being directly astern and it was on this leg of the course that the Larkspur succeeded in passing us again which put us back in our original position. When about half the distance had been run on this leg we had the misfortune to strike some floating object which we put down in the log as a whale, but whatever it was it took with it one of the blades of our propeller and so disarranged things aft at the hub that we could not reverse after the accident. At the time we did not know what had happened but noticed a decided falling off in speed as the Mabelle started right away to walk up on us and caught us just as we were rounding McCray's shoal at 2:20 A. M.

After rounding McCray's shoals buoy, which is close inshore at Cape May, our course was about northeast straight up the beach to the finish line. The run home was begun with a prospect of fine weather, but at about 6 o'clock a fog bank came in from the east and spoiled any view of the beach which there might have been.

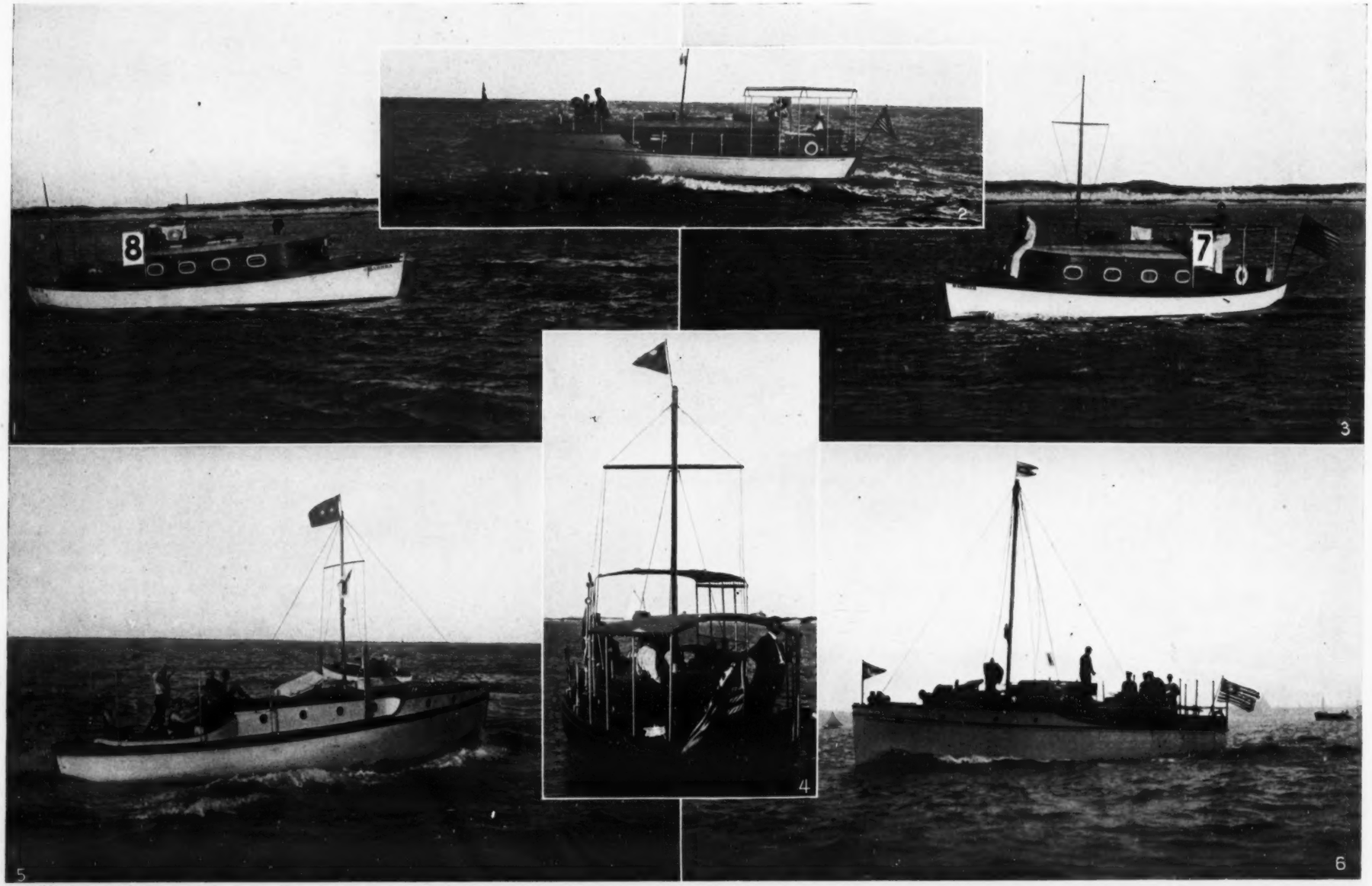
Shortly after the fog settled down we were surprised to see a motor boat coming up behind us and soon made her out to be the Alice. When they passed us they told us that we had not rounded McCray's Shoals, so we came to the conclusion that either they had not rounded the mark or had been lost and had to stop and look for it.

After the Alice passed there was nothing exciting in the trip. Every half hour or so we would take a sounding with the lead which gave us from 8 to 10 fathoms. It is remarkable how objects will show up on the water in the fog. A short distance ahead of us at one time were a lot of gulls and they looked for all the world like a launch, while visions of sail boats, bell buoys and launches kept looming up all around us. At about 10 o'clock the fog lifted a little and about a mile off our port bow was the Mabelle. Shortly afterward we saw another racer directly ahead, then in a few minutes a sail loomed up through the fog which proved to be the Mira, a winner in the Auxiliary class. In a few minutes more I saw that they were changing their course and heading for what I made out to be a bell buoy and at once called the Captain's attention to it, but he said it was the bell at Atlantic City, but it was fine for us to have run the distance according to my figures and I stuck to it that it was ours, and shortly he altered our course for the buoy, which proved to be the one we were looking for and we crossed the line third at 10:30:49 A. M., a winner according to the committee.

Owing to the fog, which was very dense, the finish was rather embarrassing for more than one and especially for the committee who were unable to find the bell buoy until after two of the boats had been there and gone into port owing to their not finding a committee at the finish line.



The start of the auxiliaries in the ocean races of the Yachtsmen's Club, the Mabel and the Mira; the latter won.



Photographs by Levick

The ocean motor boat race of the Yachtsmen's Club of Philadelphia off the South Jersey coast.
1, Chasbea; 2, Larkspur; 3, Mabelle; 4, Lady Maud—the winner; 5, Elizabeth; 6, Ilys. Alice was the seventh starter.

"Tuning" An Engine--What It Means.

How to Get the Most Out of the Motor for Cruising or Racing. Adjusting Bearings and Carbureter, Timing the Valves and Spark.

By Herbert L. Towle.

DOUBTLESS the motor boat owner never lived who was not ambitious to get from his boat the utmost speed of which its engine was capable. Carbureter adjusting, valve grinding, and tinkering with the ignition provide ample occupation for spare hours after the hull itself has been brought to the last degree of smoothness. And with the time for club regattas and speed competitions already here, every owner whose boat has a chance of success is studying what he can do to improve its prospects.

With hulls and propellers the following paragraphs have nothing to do; but when these essential elements have been made as good as possible there is often ample room for refinement in the performance of the engine. Timing a boat between two marks involves many chances of error, unless both water and air be perfectly still. Indeed, the air must be light in any case if very accurate comparisons are to be made. Given this condition, the speed of the boat will be in definite relation to the speed of the engine, and a revolution counter and stop watch afford perfectly reliable means of determining what the engine is doing. The first step, therefore, in tuning up the engine is to provide it with a revolution counter and keep careful record of its speed under different conditions. This applies particularly to when the carbureter adjustment is changed, as it is very easy to be misled regarding the effect of small changes and adjustments.

If the engine is in first-class order mechanically there is not much to do to help its power, except to try to improve the mixture and perhaps use stronger and more accurately timed sparks. Carbureter adjustment is something of an art in itself, but logically, if not always chronologically, it should follow careful attention to such matters as gas-tight valves, well-fitting piston rings, elimination of leaks from the crank case (if the engine is of the two-cycle type), correct timing of valves and ignition, and sundry other items calculated to put the engine in 'brand-new" condition. Let us examine these items in detail.

ADJUSTING BEARINGS.

First of all, the bearings must fit properly; for compelling an engine to carry its full load at high speed with loose bearings means early destruction of the engine—a broken crank shaft being among the possibilities. Not only the main shaft bearings but the crank pin and wrist pin bearings also must fit properly. A bearing cannot fit the journal unless the journal itself is truly cylindrical, and the tendency of all bearings in an explosion engine is to wear flat at the points subjected to the highest pressure. Sometimes, therefore, it becomes necessary to true up the main bearings by grinding, the crank pins by grinding or filing according to facilities, and the wrist pins either by grinding or by throwing them in the scrap pile in favor of new ones. This, of course, is a shop job. In general the amateur owner cannot be too strongly cautioned against meddling with the bearings of his engine, unless he has had practical shop experience. There is only one way to do such work right, and there are dozens of ways of doing it wrong. The utmost the amateur should ever think of doing is to take up temporarily a loose crank pin or main bearing in order to keep the engine in service a few weeks longer till the shop repairs can be arranged. If the bearing caps have shims, as is frequently the case, one or more of these shims on each side may be taken out (taking care to remove an equal thickness on each side) till the journal just turns freely without shake. As the journal may not be cylindrical the shaft must be turned clear around and rocked gently in several positions to make sure that it does not bind anywhere. In putting the bearing together it must be oiled.

No engine can have perfect ignition unless the piston heads and other parts of the combustion chamber liable to get hot are free from deposits of carbon and dirt. Marine engines do not gather coatings of dust on the piston heads like automobile engines, but the tendency for carbon to deposit is still there in some measure. In time this carbon gets thick enough and hot enough (being a poor heat conductor) to ignite the mixture spontaneously somewhere near the end of the compression stroke. Even when it is not hot enough to ignite the charge it may still be hot enough to accelerate the spread of the flame after the spark has occurred. The explosion in such a cylinder will be sudden and harsh. This in itself is not a fault, as the ideal of the designer is to have the explosion as near instantaneous as possible. On the other hand, it rarely happens that in a multi-cylinder engine this acceleration of the flame by hot carbon deposits is equal for all cylinders. One piston will have more carbon than another, and the charge in that cylinder will burn faster; consequently there is no such thing as getting the spark advance for all cylinders correct, and the power developed is less than it should be. For this reason, an essential item in tuning up an engine to do its best is to scrape the piston heads and combustion chamber perfectly clean of carbon. The best way to do this is to take the cylinders right off, unless the cylinder heads themselves are separate from the cylinders, which of course makes the job very simple.

Frequently the job of scraping the piston heads may be evaded by the use of simple scrapers forged from quarter-inch soft iron rods with short hoe-shaped ends. Tool steel should not be used, because it is brittle, and there is some danger of fragments from it breaking off and lodging out of reach, to the subsequent damage of the piston and cylinder wall. Soft iron rods can be filed to a sharp edge and bent to any shape required for insertion, If necessary, the piston may be shifted up or down to enable the job to be handily completed. The detached material must be thoroughly removed, else some of it may lodge under the valves. Particular care is necessary to leave no half-loosened fragments in the cylinder, as these will easily get hot and cause more trouble than the original deposit. The writer uses a flat dentist's mirror and a small battery lamp on a length of flexible cord to explore the piston chamber. It is generally best to have two scrapers, with ends bent to the right or left as may be required. See Fig. 1, with detail A.

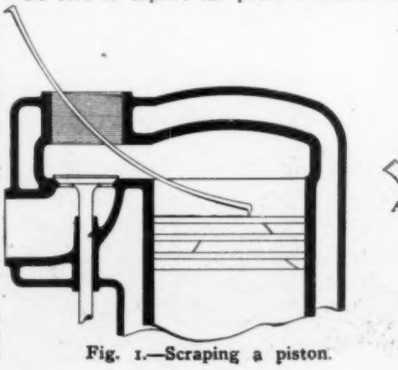


Fig. 1.—Scraping a piston.

VALVE GRINDING AND COMPRESSION

If the engine holds compression poorly a hunt must be made for the leaks. If they are outside, a squirt of oil at the suspected points—e. g., around spark plugs, cylinder-head gaskets, relief cocks, etc.—will disclose them, and the remedy will usually be obvious. An internal leak may be past the valves or past the piston. Examine the exhaust valves first: probably they will need grinding in. If the engine is old the valves may be sunken in their seats by repeated grinding, and a countersinking tool should be used to remove the shoulder thus formed around the upper part of the seats. Grinding may be done with coarse and fine emery, or with the special grinding paste put up for the purpose. Care must be used not to allow the grinding material to get into the cylinder. When ground, the valve and its seat should show a smooth dull surface. A glossy surface indicates that insufficient abrasive has been used. If the valve stems are very loose in their guides, it will be impossible to keep the valves tight any length of time. If the guides are separate, they are easily removed and new ones screwed in. Otherwise the owner is in for a troublesome shop job of counterboring and bushing the holes. New valves, of course, are necessary.

If the valves, gaskets, etc., are tight, any remaining leak is probably in the piston rings. To settle the point, squirt a few spoonsful of heavy cylinder oil on top of the pistons. This will make the rings temporarily tight. If new rings are required it is well to ascertain at the same time whether or not the pistons fit the cylinders. They should not be more than 1½ or 2-1,000 of an inch smaller than the cylinder, except at the head end, which must be reduced to allow for its expansion when hot. In an old engine the cylinders are frequently worn barrel shaped or oval inside, and require regrinding and new pistons.

LEAKS IN TWO-CYCLE MOTORS

In addition to the ordinary possibilities of leakage past the piston rings, a two-cycle engine may lose power from leakage of the fresh charge around the piston on both sides from the transfer to the exhaust port. This will occur with a poorly fitting piston even if a bottom ring is used to prevent direct leakage from the crank case to the exhaust port. For this reason a loose piston is a more serious matter in a two-cycle than in a four-cycle engine, save in one or two types of engines in which the compressed mixture must pass through a special valve to reach the transfer port. Through possible avenues of leakage from a 2-cycle engine crank case are the gasket and the main shaft bearings themselves. In the better class of engines the latter are arranged with floating steel packing rings on the inner ends of the shaft journals to prevent air from blowing out when the bearings wear loose. Moderately loose bearings may be made air-tight by the use of grease fed from spring compression grease cups.

VALVE TIMING

Turning again to four-cycle engines, we take up the matter of valve timing. It is not often that the amateur can do much to improve the performance of his engine in this direction. It is well, however, to open the cylinder relief cocks and chalk the flywheel rim at the posi-

tions where the valves open and close. A safe general rule is to have the exhaust valves open when the crank or flywheel is 40 degrees from the bottom "centre" and to close with the crank about 10 degrees past the top centre. The inner valve should open as nearly as possible when the exhaust valve closes, and should stay open 20 degrees, or sometimes even 30, past the bottom centre. If, owing to irregularities in the cams, the valves are found to be unequally timed, it may be possible to adjust the valve lifters to equalize them somewhat. There should be a clearance of from 1-64 to 1-32 inch between the valve stem and the lifter, depending on the size of the engine and the accuracy of the cams, to allow the valve stems to expand when hot without touching the lifters. Unless this clearance is provided the valves may be held slightly open during some portion of the idle period of the same.

IGNITION TIMING

After the valves are timed the ignition timing should be investigated. The procedure here will differ somewhat according to whether the make and break or jump spark system is used. The first step, as in timing the valves, is to mark the flywheel for the precise points when the spark occurs. In a 4-cylinder four-cycle engine these flywheel marks should be diametrically opposite. In a 4-cylinder two-cycle engine they will be 90 degrees apart around the circumference. In a 3-cylinder engine of either type they will be 120 degrees apart when the ignition is correctly timed. Their correctness or otherwise is most easily tested by measuring around the flywheel with a tape measure and dividing its circumference into two, three or four equal parts.

Let us first assume that the ignition is of the make-and-break type. If the igniter is of the snap-off variety, there is not the slightest difficulty in settling the precise flywheel position at which the spark occurs. Strictly speaking, there is a lag between the trip or snap and the production of the spark, and this lag is greater, measured in degrees of crank angle, as the speed of the engine increases. If all the igniters work alike the lag will be the same for all. If one works stiffer than another or has a weaker spring, its lag will be greater, and in case that cylinder is found to give weak explosions the cause may quite possibly be found in this sluggishness of the igniter.

Occasionally one finds an engine with make-and-break ignition operated by rise and fall cams instead of by snap cams or by hammer blow mechanism. As the fall of the cam occupies a considerable angle of crank rotation, the precise point at which the igniter points are made to separate is a matter of some moment, and it can be varied considerably by adjustment. Usually the cam operates light rise and fall rods which engage rocker arms on the igniter stems, and the length of these rods can be adjusted to modify the point at which they strike the rocker arms. As there is no sudden snap to guide the operation, the best way to insure accuracy is to put a battery voltmeter in circuit with the igniter. The needle of the voltmeter will then indicate the precise instant when current flows and ceases to flow through the igniter contacts. In apparatus of this kind, care must be taken not to adjust the igniter rods to make too brief a contact, as this would not permit the coil to build up when the engine runs at speed. On the other hand, if the contact is too far prolonged it may overlap that of the next previous igniter, thus keeping the circuit continuously closed with the result that no spark at all is produced.

If jump-spark ignition is used with battery and coil, no change in the wiring is required in order to test the ignition time. The flywheel is simply turned slowly in its running direction till the trembler begins to buzz, and its position is then marked. Accuracy of ignition timing with this apparatus depends mainly on the workmanship and condition of the timer. If the latter is badly worn, accurate timing is impossible, and it will pay to put in a new timer. The roller-contact type is more troublesome in this way than the snap type, but neither is good for much more than a season of average use. The snap type, however, can be renewed by simply replacing its two steel contact points. The timer lasts much longer if it has ball bearings.

At high speeds the lag of the coil tremblers becomes a material factor in modifying the perfect synchronism of the sparks. If all tremblers worked exactly alike there would be no trouble from this cause; but they never do, and the owner's only recourse is to adjust them as nearly alike as possible. One way to do this is to hold down all but one trembler and set the throttle so that the engine runs at about half speed, then adjust the one operative trembler till the engine fires best, then shift to the next one and adjust it similarly, and so on till the engine runs about equally on each cylinder. If it runs conspicuously better or worse on any individual cylinder, the reason should be hunted out. It may be in the length or form of the mixture piping, the timing or lift of the valves or the tension of their springs, or presence or absence of compression leaks. If the coil has been used considerably without attention it is quite likely that the platinum contact points of the tremblers need attention. This will be indicated by inability to produce a clear buzz with any adjustment of the contact or its screws. On examining the contact points they will generally be found badly roughened and perhaps eaten entirely away. They should be dressed to a true flat surface with a fine jeweler's file and carefully adjusted. If necessary, put in new platinum points. It is not easy to get the flat faces of the points to bear evenly, but the job repays the trouble.

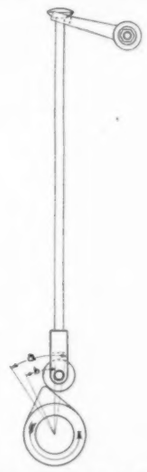


Fig. 2—Timing "Make and break" ignition. Showing how length of contact varies with length of rod; a, long and b, short contact.

CARBURETER ADJUSTMENT

The last item on our list is the carbureter adjustment. This subject is really so extensive as to deserve several pages to itself, as the subject is emphatically one of those in which "a little learning is a dangerous thing." Broadly speaking, if the carbureter is of the automatic type having a spring-controlled auxiliary valve, this valve is intended to be shut at the lowest engine speeds, and to open by degrees with augmented speed till its maximum lift is attained at maximum engine speed. What this maximum lift should be will depend on the size and speed of the engine. There is usually a stop intended partly to prevent fluttering, partly to control the maximum opening of the valve, and the adjustment of this stop should be very carefully made. There is usually a needle valve of some sort controlling the passage of gasoline from the spraying orifice, and this needle valve should be adjusted till the engine runs best at its slowest speed with the throttle as nearly shut as possible. Next the throttle is gradually opened, and the tension of the auxiliary air valve spring is increased or decreased carefully till the best adjustment for average running conditions is found. Finally, it may be that a slight further adjustment of the needle valve will improve the engine's high speed performance still further. Of course, if the boat is being tuned up for a race, ease of starting is not particularly important, and the main object is to get the maximum speed. This will probably require a wider opening of both the auxiliary air valve and the needle valve than are found best suited to ordinary running.

The adjustment of the tension of the auxiliary air valve spring should be made by varying its strength through alterations in the number of convolutions, the diameter of the spring convolutions or the gauge of the wire, rather than by setting down or backing off the adjusting screw. In obtaining the closest and most flexible adjustment, the proportions of the spring, as above, should govern the movement of the valve, the adjusting screw being employed for the simple purpose of locating the valve upon its seat with only sufficient pressure to maintain it there under lowest throttle.

The reader will understand that adjusting the carbureter is a delicate matter and should be very carefully done, or matters may be made worse instead of better. It is best to change only one adjustment at a time, and when a setting has been found at which the engine starts easily and runs fairly well, each adjustable member should be marked in some manner so that it can be restored, if necessary, and a fresh start made.

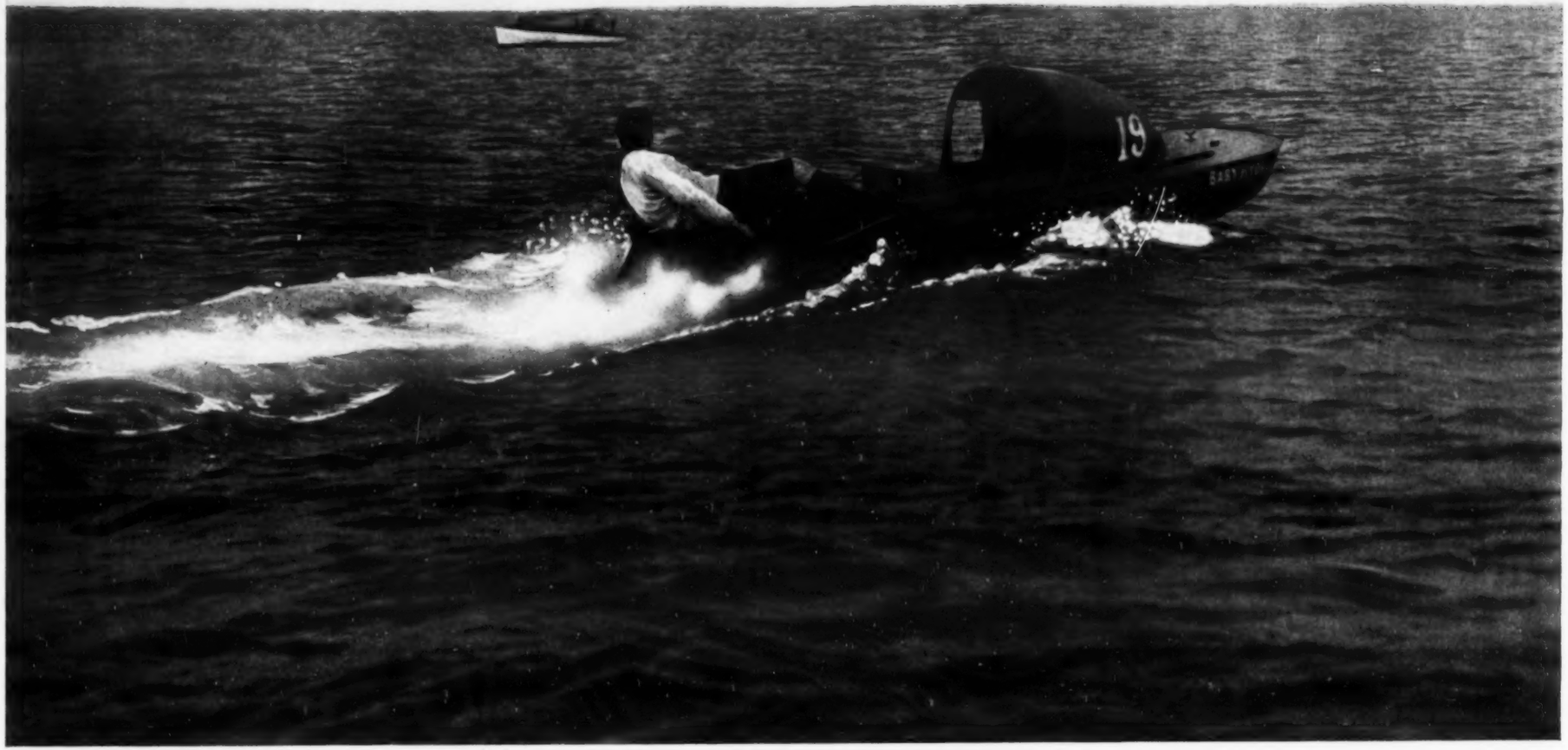
An Auxiliary Pilot Boat for Southern Waters.

A TYPE of auxiliary schooner designed for the pilot service and intended to be at sea in all weather is the W. D. Morgan which was built this summer by the Chesapeake Marine Railway, of Baltimore, for the pilots of Georgetown, S. C.

She is a flush-decked vessel 63 feet over all, 58 feet on the waterline, 15 feet beam and 8 feet depth. Her motive power is a 50 horsepower Standard engine which is installed in the after part of the hull. The center of the hull, occupying a section about 15 feet long, is devoted to the main cabin with three berths on each side. Forward practically all of the space is taken up by the galley and berths for two members of the crew who are paid hands.

The vessel is finished plainly but substantial with fittings of galvanized iron, and cost but $6,000 complete. Such a boat would make an ideal type of craft for anyone who wanted a small but able craft for off-shore fishing, etc.

The auxiliary pilot boat, W. D. Morgan.



The above is a photograph of the latest English type of skimmer or hydroplane. She is called Baby Hydro, and was designed and built by the Maudsley-Brooke Co. On a very short water line she has developed astonishing speed, and, what is still more remarkable, she seems to be able to maintain it on rough and troubled water, which has heretofore been the chief drawback with this type of boat.

Motor Boat Possibilities in China.

The Application of the American Gasoline Motor to the Chinese House Boat. The Superiority of Motor Boats Over Steamers for the Shallow Waters of the East.

HOUSE boats have been in use by the natives of China for some hundreds of years, and have been improved and largely used by occidentals living in the Chinese Empire since their arrival in the country. At Shanghai large numbers are owned by the well-to-do Chinese merchants as well as by foreigners.

These boats are usually supplied with long oars and are rowed by Chinese boatmen who can be employed at about 20 cents a day. Generally 6 men are sufficient in the creeks in and about Shanghai and the lake districts, as well as on the grand canal, especially as when going on long trips these boats are attached to steam launches which pass up and down the canals at intervals drawing long trains of various kinds of boats. In Foochow and some of the southern Chinese ports a crew of 8 is usual, at a total cost of about $1.20 a day for the entire crew. Sails are also used on these southern boats to a considerable extent.

An innovation has recently appeared in Shanghai, writes Consul Wilbur T. Tracey of Tingstau, which is a motor house boat recently built for the Asiatic Petroleum Company. This boat is rather larger than the usual type of house boat in Shanghai and has finer lines and a torpedo stern. The principal dimensions are: Length, 57 feet; beam, 9 feet; draft, 23 inches. The boat is driven by 2 Kelvin motors, each of which has 4 cylinders and is capable of developing 14 horsepower. With the present type of propeller these motors are unable to run at full speed, but they attain 22 horsepower, and a speed of 8 miles an hour. Gasoline is used only to start the engines, ordinary kerosene being used when they have once been set in motion. On a recent trip from Shanghai to Hankow and back 7 cases of kerosene were used and the journey occupied 12 hours less than the ordinary boat train. As petroleum can be purchased in every Chinese city there is no difficulty in replenishing fuel.

It appears possible that this type of boat will become popular with foreigners and Chinese in China, and if so, there should be a good opportunity for the introduction of American types of marine engines. It must be remembered that these engines should be made for boats with a shallow draft, and it is also important that the boats should leave little or no wash, which is an important consideration in creek traffic in China, where a heavy wash is liable to destroy the mud banks and make trouble for the boat owners.

STEAMERS AND MOTOR BOATS IN THE INLAND TRADE.

In regard to the steamers in Chinese inland waters and their possible replacement by motor boats, Consul-General Leo Allen Bergholz, of Canton, says:

There are registered in Canton, as engaged in inland trade, 289 steam launches, divided among the different flags as follows: American, 2; Chinese, 268; English, 5; French, 12; German, 2; total, 289. In addition to those registered as trading there are about 10 private launches and 51 motor boats. Those engaging in trade range from 1 ton to 150 tons, which mark the limit of the launch class, although under special dispensation a boat of higher tonnage may be classed as a launch. The average is about 20 tons.

As to the engines, it seems, that originally they were imported from England and, to some extent, from Germany, but as repairs were needed and the distance of Germany and England precluded the possibility of getting new parts on short notice, the Chinese began in a small way, with the original parts as patterns, to replace the broken pieces.

There seems to be a divergence of opinion among makers of engines and launch-owning companies as to the market for motor boats, it being significant that the former think them impracticable, while the latter declare there will be a large demand for them in the near future. When it is taken into consideration that the Cantonese engine builders have not yet learned how to build the gasoline engine, with its complicated electrical attachments, it will be seen why they advocate steam vessels. Although if the demand were forced upon them, with the help of returned American (Chinese) educated engineers, it is probable they would be equal to the occasion.

To explain the optimism of the launch owners for the future of motor boats, it is necessary to go into the nature of the waterways about Canton, and the great dependence placed on inland navigation. The country is a network of rivers, joining and then separating, making an innumerable number of islands, the whole system between Canton and Wuchow on the west, and Hongkong, Macao, and Kongmoon on the east, forming a huge delta. As is characteristic of delta regions the channels meander in an immense alluvial plane, none being very deep, the depth constantly changing with the tide, the influence of which is felt for 100 miles inland. Added to these tidal influences is that of deforestation in the interior which permits huge floods in the rainy season, and a corresponding extreme of shallow water in the dry season. Thus one can picture this great, rich agricultural region interlaced by shifting delta streams, the depths of which are subjected constantly to the changing tides and alternate floods and low water. Then take into consideration that the only means of transportation, other than coolie, throughout this great region and up to the three large rivers adjacent to Canton, the North, East, and West rivers, is by boats, and the great need of an efficient river service by fast boats that can navigate in very shallow water can be seen. On account of the larger hulls necessary to steam launches, the motor boat, other things being equal, is without question superior to the steamers in traveling about these shallow reaches.

SUPERIORITY OF MOTOR BOATS.

The superiority of motor boats over steamers thus being apparent in the matter of greater radius of action, there is also the question as to whether a motor boat can do the work of the steamer. There is no way of answering this question here by comparative statistics, for motor boats have not been tried as yet for other than pleasure or private uses. It is interesting to note, however, that very recently two motor boats, under the ownership of Colonel Yang, have been put into commission as passenger boats, the engines of both being two-cylinder, American make. The principal use to which steamers are put is the towing of passenger boats. These are flat bottomed, drawing but little water, their ability to proceed up rivers being limited only by the width of the channel. Manifestly the motor boat will have a great advantage over the launch on account of draught, and there can be but little doubt that it is capable of doing the work required of it. Further, it is thought that gasoline engines could be installed on the passenger boats without increasing the draught to a great extent. Steamers are not used for cargo boats, and when big enough for the purpose pass out of the class of launches. This leaves to them only the towing of passenger boats as just described, or their use as passenger boats. There can be no question but that they can carry practically as many passengers as a launch of equal horsepower, as less room is taken up by boilers, etc.

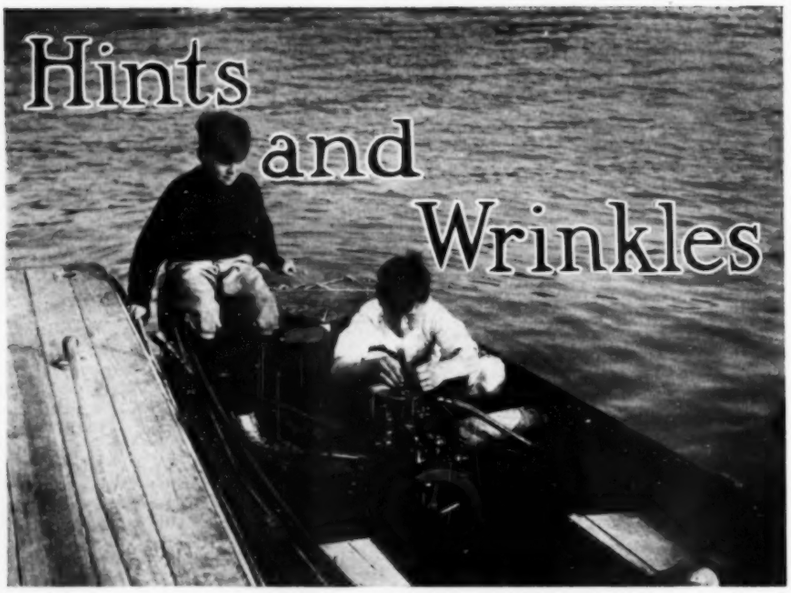
THE QUESTION OF COST.

Having thus shown their superiority in the way of draught for these waters and their ability to do the same work as steamers, there remains the matter of original cost, the expense of running as to crew and fuel, and their deterioration. No figures being available to answer these questions, the statements of the operators and of the builders, verified by my own experience with motors, will have to be taken. In the matter of crew the expense here would be cut down by at least three firemen and two sailors, which would be about one-third of the crew charges. As regards fuel, with coal at $5 per ton, and the well-known economy in the use of gasoline, the cost of the latter would be far less. With the average engine costing $2,800, the purchase of a gasoline motor of equal ability would probably cost less, and added to that is the saving made by smaller hull and less extensive deck furnishings. Operators and builders say that the cost of the upkeep of the motor boat exceeds that of the launch and that the latter is much more reliable, but when pressed they both admit that these objections are probably due to the inexperience of the native engineers.

WHAT AMERICAN MANUFACTURERS SHOULD DO.

American manufacturers might do well to take the matter in charge, send over representatives, and proceed on a systematic campaign to educate the Chinese to the use of the motor boat. This would mean the opening of an agency here where engines would be sold and installed, expert repairers to keep the engines in order, and the greatest care taken to turn out competent native engineers. The United States is the country to do this, as of the motor boats here now more than 80 per cent of the engines are of the regulation two-cylinder, well-known American make, which means that the Chinese look to the United States for gasoline motors, and certain makers once having a foothold it will be difficult to turn the attention of the Chinese elsewhere. But as to the best point to locate an agency in South China as between Canton and Hongkong, the advantage would probably lie with Hongkong, as again the matter of 5 per cent import tariff comes up. Hulls will probably be built in Canton, towed to Hongkonk for the motors, and then return to Canton under their own power, paying only tonnage dues. A number of firms could combine and send out a representative with a view to looking over the ground and following up the initial advantage that American motors already have. Whether this is done or not, if a competent engineer with a thorough knowledge of electrical machinery would come out here and open a repair shop he could undoubtedly make a handsome competency. There are over 31 motor boats permanently laid up, because there is no one, foreigner or native, capable of repairing some little derangement of their machinery.

There is a large field for motor boats in South China, but simplicity in the construction of their motor power is essential, as Chinese engineers, almost without exception, understand nothing of the mechanism or theory of gas engines.



In Measuring the Gasoline Supply.

REMEMBER that the fellow who uses a dirty stick to measure the depth of gasoline in the tank is the one who is likely to have trouble with his engine and to find dirt in the carbureter.

* * *

Should Carry a Compass.

Every boat likely to be "caught in a fog" or to be blown out of sight of land should be equipped with a compass.

* * *

Test the Motor Before Casting Off.

Even if you feel reasonably sure that everything is all right, never cast off from the buoy until you have tried to see if the motor will start readily and if there is plenty of gasoline in the tank.

* * *

The Effect of Carbon.

When we consider that it is generally accepted in steam engineering that a coating ¼ inch thick on the insides of the boiler tubes necessitates an increase of about 60% in the heat supplied to produce the same amount of steam, the effect of excessive coatings of carbon on the walls of gasoline motor cylinders can be appreciated. The carbon prevents the heat from readily reaching the water jackets, and while at first it may tend to increase the power to an extent it eventually causes preignition through retaining too great a proportion of the heat generated on the power strokes.

Carry Two Anchors.

It is a fine plan to carry two anchors, one heavy and the other light, with a cable for each. Most times the light one will be sufficient, but there will be others when the heavy one will not be too much, and you may be glad some time to have both. When that time comes, drop one and veer broad off two or three lengths before dropping the other.

* * *

Megaphone As Ear Trumpet.

A megaphone is a good thing to have aboard. Did you know it will work both ways? Try it for an ear trumpet if some one hails you when the motor is running and see what a difference it makes.

* * *

Regarding New Piston Rings.

If the increased power that was expected does not materialize after new piston rings have been fitted, it should be remembered that new rings cannot possibly conform exactly to the bore of the cylinder, and it is only after a great deal of running that the fit will become approximately good. As a rule the condition of the cylinder bore is rarely considered: the old rings are used as a pattern and a new set made a shade larger to compensate for wear. The correct but more difficult way is to have the cylinders first gauged for circularity and parallelism, and, if found wanting in these respects, trued up by grinding. Then a set of rings is turned so as to be a dead circular fit and not too tight in the bore. Some favor the method of grinding in the rings if the truing of the bore cannot be carried out, but even this is a workshop job, as the engine requires to be belted up to some source of exterior power whilst the abrasive, usually crocus or rottonstone and oil, does its work.

* * *

A New Horsepower Formula.

At the request of the Expert and Technical Committee of the Royal A. C., Mr. W. Worby Beaumont has recently prepared a most exhaustive report on horsepower rating and the various formulae which have been put forth by motor engineers and others. Mr. Dendy-Marshall's formula, which Mr. W. Worby Beaumont recommends for four-cycle motors, is as follows:

$$\frac{d^2 \, S \, N}{12} = \text{h.p.}$$

This may be simply explained as follows: d^2 = diameter of cylinders in inches squared, S = stroke, and N number of cylinders, while 12 is a constant. As an example we may take a four-cylinder engine with a 4-inch bore and 5-inch stroke. First we square the diameter 4 x 4 = 16. We multiply the 16 by 5, giving us 80, and then we multiply that by 4, with a result that we have 320. We then divide by 12, and get 26⅔ h.p.—a very fair rating of an average engine of the dimensions.

In summing up Mr. Worby Beaumont points out that if it is desired to know the horsepower of any particular engine with accuracy, it can only be ascertained by making a brake horsepower test. On the other hand, a close approximation to an accurate estimate of the power can be obtained by employing the comprehensive methods and formulae adopted by experienced engineers. At the same time these are far too complicated for ordinary everyday use, and moreover the simple formula given above is so nearly as accurate as the more complicated ones that for general rating purposes it is to be preferred. The great advantage of the Dendy-Marshall formula is that it takes stroke into consideration, and it is even easier to work than the R. A. C. formula which assumes a piston speed of 1,000 feet per minute.

* * *

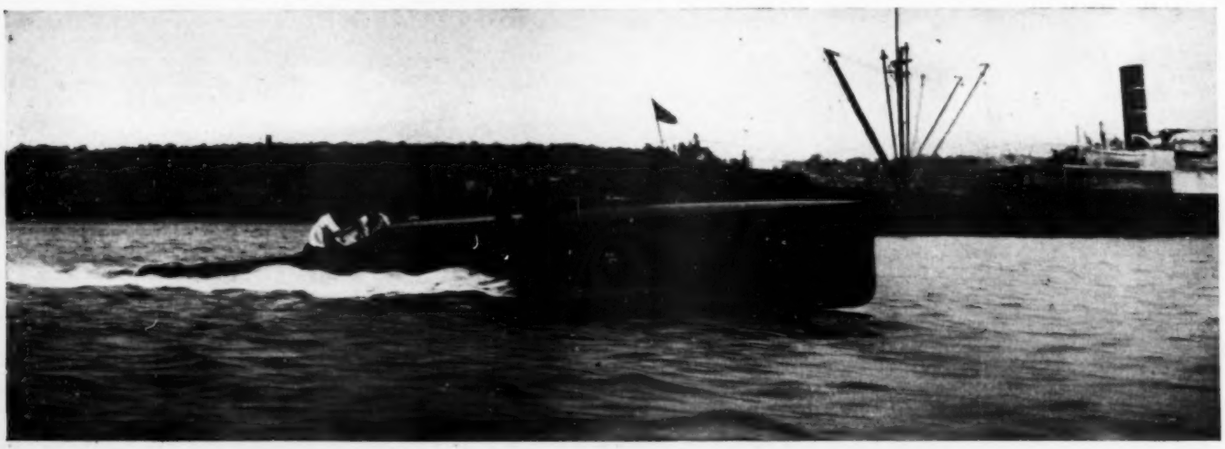
Watch the Anchor Cables.

See that the anchor cable and small lines are sound and good. It is cheaper to throw away a worn out cable and get a new one now than to have it part later on. The same is true of the mooring chains and snap lines. It needs no argument to prove that they will break, if at all, just at the wrong time.

* * *

Keep the Tools Clean.

It is very easy to clean tools on a launch if you care how they look. If you use the pipe grip to hold an eel or skate while you unhook him—and there is nothing so handy—wash it thoroughly and dry it on the exhaust pipe and then oil it well while hot. Do the same with the other tools, and with such care they will always work well.



Whistler, a speedy runabout, owned by Ralph E. Slaven, N. Y. Y. C. **See plans on page 18.**

Hints on Motor Boat Navigation.

Part III.—Course Running in Fair Weather, Fog or Storm.

By George S. Goldie.

COURSE running is one of the most fascinating parts of boating. To lay a course for a buoy lying perhaps twenty or thirty miles beyond the horizon, or even two hundred miles, as I once saw, and after running for hours with no other guidance, to bring the boat to the exact spot desired, is not only a delight to the enthusiastic boatman but is an accomplishment of which he frequently may be proud. By observing the pilots on coastwise steamers you will find that they run from mark to mark as faithfully in clear weather as in foul; also that the time, tide and weather are carefully noted, in order that they may have data by which to navigate when the weather is thick. In order to illustrate this most important branch of navigation, several actual examples of course running in fair weather, fog and storm will be given, beginning with a run to the Eastward from the entrance to Fisher's Island Sound.

As we pass out by Watch Hill and leave Gangway Rock spar buoy No. 2 on our port, we lay the parallel rulers on the chart and find that by placing one of its edges so it will reach from Gangway Rock to a safe clearance of Point Judith, and swinging the other arm out until its edge cuts the dot in the center of the nearest compass rose, that this rose is cut by the ruler at East ⅛ South and then by spreading the dividers until they span five nautical miles on the scale which is found on every chart and applying the dividers along the line of the course to Point Judith, that the Point lies 17¼ miles away. The course being along a shore which is without a break or inlet of any size, the current will be fore and aft and no allowance for it need be made.

From Point Judith we lay a course by the same method to the Hen and Chicken light vessel, for we are going through Woods Hole, and it is best to run from one mark to another when on a passage and not racing. We find the course (the sailing course, not the compass direction from light to light) to be East and the distance 21½ miles.

We now use our knowledge of the tides and our judgment in making allowance for the current. The tide has been running flood for an hour when we start on this run and the coast line is broken by the large body of water of Narragansett Bay and the lesser Sakonnet river. The water flows into these directly across our course at an average of about one-half mile an hour, being strongest when we are abreast the inlets; therefore, if it takes us 2⅓ hours to reach the lightship, we will drift inshore about 1⅙ miles unless allowance is made in the steering to counteract the drift, this being done by the method given in the July article. If unfamiliar with the speed of a tide, one may judge its direction and rate of flow by observing the lay of the lobster floats or buoys, and the action of the water against them.

Our next course will be laid for abreast Penikese Island, about the same tidal allowance being made as on the last run, because of the tide flowing into Buzzards Bay. It was on the run across these waters that the government steamer Yankee met disaster during a fog by striking the Hen and Chicken reef, resulting in its probable total loss. From Penikese Island to abreast Wood's Hole passage the current is fairly fore and aft and no allowance need be made.

We now swing to make the run through the Hole. We guide our course by the buoys and post lantern lights, breast the 8 or 9 mile tide as best we can, swinging from one side of the channel to the other as the appearance of the water indicates a stronger or a weaker current. Upon emerging from the exciting conditions of the passage it is noticed that the Nobska, West Chop and East Chop lights are lighted.

Care is taken by the government that light structures and lights in the same neighborhood vary decidedly in their characteristics. Some give a steady white light, others a steady red; then there are revolving white and revolving red lights, and the revolving lights which flash so many times red and so many times white in a given interval. A fine affair is a light which shows a steady white and at intervals gives a brilliant white flash. Also there is a white light with a red sector, the meaning of the red sector being that within the field of its rays lies a danger to navigation.

Generally, one knows a light at sight because of its plainly marked characteristics, but circumstances may arise under which the best of navigators should proceed with caution. In misty or hazy weather a white light, particularly if of a weak order, is apt to have a decidedly red cast and a red light is liable to be obscured. For example, in raising Gay Head light from the seaward one winter night only the white flashes could be seen. Though the Cross Rip light (red) is supposed to be seen 10 or 11 miles and East Chop light (red) 14 miles, there will be many conditions of the atmosphere in which those distances will be reduced three-quarters, and that without either rain or fog. These are the times which bring out the seaman, the man who, when conditions are awry, is not so disturbed lest he be suspected of being deficient but that he will consult the chart or Buoy Book and, if need be, with his watch time the light which is causing doubt. Care in these details will save contact with reefs and shoals and the making of bad landfalls by poor course running.

Being now in Nantucket Sound we are in a region of sand shoals. All the spare sand of the southern New England coast has been scattered in these and the adjacent waters, causing almost every light bordering on the Sound to be cut by a red sector; Nobska, West Chop, Great Point, Monomoy and Bishop and Clerks all have them and by their use you are warned of the proximity of the various shoals which are covered by their red rays.

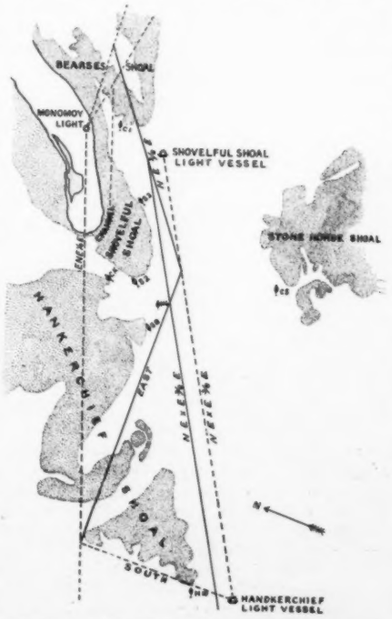


Figure 1—Inside passages at Monomoy

These courses should be verified by consulting chart No. 250, which may be obtained from the U. S. Coast and Geodetic Survey, Washington, D. C., by sending the price, 25 cents. To follow the entire course from Long Island Sound to Boston, charts Nos. 110, 111, 112, 113 and 114, costing 50 cents each, and No. 348, costing 25 cents, also will be required. Remittances for charts must be in currency or money orders, as bank checks or postage stamps are not accepted.

Keep out of the red rays of Nobska and you will clear the Le Hommedieux and Hedge Fence Shoals; if entering the red rays of West Chop, the Squash Meadow sands will be close under your bow. If the red of Great Point light is seen when in the vicinity of Cross Rip light vessel, or beyond, edge to the northward that your journey may not be delayed.

As we pick up the Handkerchief light over our starboard bow, we begin to lay plans for the run by Monomoy Point, the much talked of passage since the establishment of the Marblehead race. If you have been running the ship channel you will leave Handkerchief light on the starboard hand and holding a North-East by East ⅜ East course, head for Shovelful light vessel. In running this course the tide will be fore and aft with you for a mile or more, then it will begin to cut you on the starboard bow or on the port quarter, as it happens to be following easterly or westerly. Soon, as you approach Shovelful Shoal the current will be fair on either beam and will carry you very fast either away from or toward the Handkerchief or the Shovelful Shoals. This feature presents a beautiful point in current running whether by night or day and will teach one faster than almost anything else the value of becoming familiar with the use of the compass. As the current begins to cut you a little to one side or the other you will notice that though you are holding the proper compass point true on the lubber line that the boat is sagging badly away from the light, and you would soon find yourself heading desperately for the light and utterly regardless as to the doings of the compass. The remedy for this condition is: when the boat begins to sag, forget the lubber line and hold the compass point true to the object ahead, no matter how far to starboard or port the bow may be swung. By so doing the boat will be held automatically to a true line, and as the lubber line swings to the right or the left of the point in use it will show how many points off the boat is being steered and consequently will tell unerringly the stronger or weaker parts of the current. The knowledge of this method of holding a course is valuable when running a channel between reefs or shoals which are crossed obliquely by the current.

The course we are at present running is to be held until arriving abreast of Shovelful light vessel, which we will leave on our starboard, but for variety we will suppose we have come by a more northerly course than the ship channel and wish to run the Monomoy inside channel. This presents the problem of how to avoid shoal water by the bearing of lights.

With the eye or a glass, pick up the Monomoy Point light, which is fixed white, the red sector not being seen from this position; bring it to bear East North East ¼ East, run on that bearing until Handkerchief light vessel bears South; then shift your course to East and hold that until arriving on a line between Shovelful and Handkerchief lights. Now bear up for Shovelful light until it is abreast on the starboard hand. Over from abreast the Shovelful light the current will be fore and aft and one has simply to steer North East ⅝ East in order to pass between Bearses Shoal and Monomoy Point with a least depth

of 8 feet of water at low tide and a channel width of nearly half a mile.

On this run, should the tide be flowing into the sound (westerly) it will be necessary for an eight or nine mile boat to steer a full point to the south in order not to be carried onto the shoal parts of Handkerchief or Shovelful Shoals. With the current flowing easterly there is no need of precaution as the drift will carry the boat down to the line between the two light vessels.

There is also a good channel between Shovelful Shoal and the Point. To run it, be well up toward can buoy No. 1 on the east part of Handkerchief Shoal, then head for the point and skirt the beach within 400 feet, taking care to be well out toward Bearses Shoal can buoy No. 1, when between it and the light house. This buoy is colored and numbered as a port buoy when entering the sound, but by using it as a port buoy when *leaving* the sound one will avoid the very shoal spot at the northeasterly end of the channel it marks and have a broad and easy channel of 8 feet depth at low tide and 12 feet at high tide.

When going through this passage we will observe that the white of Monomoy light changes to red and shortly afterward to white again. As it changes to white we are about to alter our course for the run up the beach when we become aware that the light has been shut out by fog. The running of the beach is now a little more difficult but not very much more, as there is nothing in the way except the shoals off Chatham, so we lay a course for the Chatham whistler and time ourselves that we may know when we should be there.

In fog running, the important factors are to know the speed of the boat, the strength and direction of the current one is in and the use of the lead. To find how long it will take to cross a current, either at right angles or obliquely, has been shown in the diagrams in the July article. Here, and all the way up the beach, the current is fore and aft and we need make no account of it excepting that as it is with us at an average velocity of two miles an hour we will cover the distance to the whistler at the rate of eleven miles an hour, the boat's speed being nine miles per hour.

From here up the Cape there is nothing in the way and we gradually edge to the port hand as we follow the trend of the beach, taking a sounding every 15 or 20 minutes and sheering off a little when we get inside of four fathoms. Gradually we swing from East of North to West of North and when the course reaches North North-West we know we are approaching the Cape Cod Light Station. Soon we pick up its 8 second blast with a 30 second interval. When abreast of it we determine to run for the Peaked Hill Bar whistling buoy. When in its vicinity a long blast, followed by two short ones, is heard indicating a tow. We have, or should have been blowing six seconds blasts at intervals of one minute. The tow is blowing her signals at the same intervals. Soon in the growing daylight we make out the shadowy form. As we pass, no starboard or port whistles are given as they are not allowed in fog.

We soon hear what sounds like a steamer giving two powerful blasts, but on consulting our watches we find the blasts to be of 4 seconds duration and 8 seconds apart, and in groups of two, with 44 seconds intervals, telling that it is the Race Point fog signal. The tinkling of bells tells us that some fishing boats are anchored near by, a bell rapidly rung for six seconds once a minute being the fog signal given by vessels at anchor on the seaboard.

Some light stations have bell fog signals; these are generally struck by machinery, either a single blow or a double blow, and at varying intervals. Also there are electric gong fog signals and attached to the bottoms of light vessels are submarine bells. These are wonderful in their accuracy and their superiority over bells in the open air and fog horns is shown in the fact that they can be heard five times as far as a bell and nearly twice as far as a fog horn. To hear the submarine bell, receiving plates are required, being attached to either bow of the vessel below the water

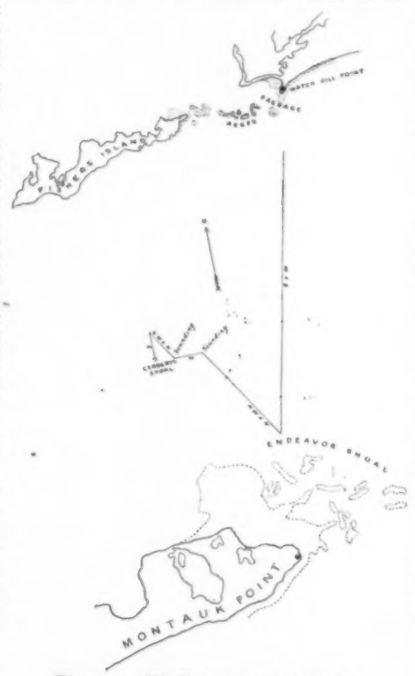


Figure 2—Finding a mark in a fog

This diagram should be verified by consulting chart No. 114, which may be obtained by sending 50 cents to the U. S. Coast and Geodetic Survey, Washington, D. C.

line; from these wires run to telephone instruments in the pilot house. By placing the receiver to the ears the direction of the sound can be told within less than a point.

The vagaries of fogs are vexatious and wonderful. I have seen good-sized vessels appear like toy boats and beacons appear to be three stories high. By it sound may be dimmed or shunted overhead in such manner that one within half a mile of the signal may not hear it, while vessels six miles away may hear it distinctly. In the latter part of June a torpedo boat destroyer was sent out to the South Shoal light vessel, 40 miles off Nantaucket, for the purpose of repairing the latter's wireless apparatus. There was fog but the light vessel had her fog signal and doubtless was using it, while the destroyer had her siren and must have been using it. Yet the destroyer cruised a large part of the day and returned to port without finding the light vessel. Also the history of the nearly all-day search for the sinking steamer Republic in a fog is familiar to most of you. Let me give a practical lesson in fog work by relating the finding of the Cerberus Shoal whistler in a fog last May.

The wind was northeast and the air gray, the sun breaking through at intervals. We had cleared the Watch Hill passage and were heading in a general sort of a way for the whistler, for we wanted its photograph. We did not know its compass bearing and cared little, as we expected no trouble in locating it and we were having a good time on the way. Suddenly we awoke to the realization of the density of the fog which had silently enfolded us for all the world as if it had caught us napping, as it surely had. Fourteen miles by twenty-five is Block Island Sound, with a three-knot current crossing it and the whistler in the middle of it. Where were we when we began to reckon? Well, we would guess at it. And how fast was the boat? As it had recently had a cabin put on no one knew and as we had not expected any but ordinarily thick weather we had taken no pains to find out. At this time there was no knowledge of a chart being aboard, so we guessed again and steered our course South by West.

Having run out the time we guessed at, the motor was stopped and we listened, but it was only to the swish of the waves. The motor was started and stopped again in twenty minutes. This time a horn was heard but such was our confidence that no attention was paid to the sound other than to hear it, and the motor was started and run for ten minutes more and then stopped. Again the horn was heard but not much plainer even though we seemed to be heading for it. That told me that it was a powerful horn a long way off, for if of the volume only of a whistler, ten minutes of running should have brought us within an appreciable increase of its sound. Out came my watch and a single count of the regular blasts told me it was the Montauk horn.

Knowing that we almost surely had overrun our time, the boat was turned back from the course, but at an acute angle from the course we had come. In twenty minutes the motor was stopped and, apparently dead ahead, was the sound of the whistler, moaning fitfully as it rose and fell on the irregular waves which gave birth to its sounds. Again we started the motor and after ten minutes we stopped again. The Sphinx could not have been more silent than that signal. A sounding was taken with a fish line and it gave us 17 fathoms. Then the owner bethought him of a chart on board. It was brought out, a short slant was taken to the west and the boat stopped. Race Rock and Little Gull were both picked up but no whistler. Another sounding gave 14 fathoms.

The boat was squared away on the old course and stopped in five minutes' time, when the faint moan of the whistler again was heard. The owner and I agreed that the sound came from ahead while the other declared it came from overhead. We ran ahead for three minutes and stopped and, from astern on the port quarter came the loudest moaning and groaning which ever was emitted from a whistler; it was uncanny. It took us five minutes to run back to it and how we had passed it could not be told. It was an excellent illustration of the diversion of sound by fog.

Another interesting fact noted was that out there in the sound the weather was moderate while inshore we were told that the wind had blown a gale all day. This was another demonstration of the fact that though a Northeaster is supposed to be a general storm, its intensity is not evenly distributed.

As the boat on which we had journeyed up the cape proceeded on the North-west ¾ West course for Boston light, the fog began to clear with a suddenness which betokened a hard westerly wind and such it proved. Vicious affairs are the "Westers" which clear the air with such suddenness, bringing a bright, clear merciless sky.

The water began to top over the deck and all was made snug with stowing and lashing. The boat astern was gotten inboard and lashed securely, the forward hatches were secured in thorough manner and we held to the course. The ripples turned into waves and the waves into billows. Streaks of foam appeared lining down the wind, wide apart at first, but rapidly drawing closer until finally they ran together and the entire surface was beaten into foam. It was getting beyond endurance, the beat of the spray against the face, the scoring of the eyes with salt, the gasping for breath as the flooding water poured over the nostrils, the fierce plunge into the black valleys, the heavy lift of the boat and finally the throw, when for a moment, like a wounded bird, she lay on her side with the water pouring over the coaming, all showed that a storm of unusual severity was on and that extraordinary precaution had to be taken.

We put together in the form of an X two boards which were on board for the purpose and across the face of these we lashed canvas, fastening it to the corners with marlin. To the four corners we made fast lines of fair

size, well parceled that they might not be chafed. These corner lines were brought together at a moderate distance from the drag and to them was fastened a riding line, then one edge of the drag was weighted enough to cause it to stand fairly upright in the water. The drag was then cast over and when the riding line was checked the drag tore through the water for a moment and then the boat slowly swung until lined out with it and for the time our position was eased, but not for long.

The white riders on the racing waves were being hurtled from their mounts and carried bodily through the air in great sheets and showers. It was an effort to face the wind, the boat was diving into the steep declivities with a force which threatened its being overrun by the next leaping wave and something more had to be done, if we were to live it through.

Oil bags and oil-soaked waste were put over the bows and sides in profusion, but the storm only shrieked in derision at out futile efforts as it hurled the oil-smeared water back in our faces. Had we further resource?

"In with the sea anchor!" shouted the skipper.

While we were hauling it in our skipper was busy reeving a line through a small pulley and as the drag came bumping alongside he made the pulley fast to one of its upper corners.

"Slack away!" was his next command, and as we let out on the riding line our skipper gave length to the doubled pulley line, tied its ends together, made fast an oil bag, hauled in on the upper line, sending the oil bag out to the position desired and made the line fast. The oil was now wnere it was wanted, its slick spread out over the surface of the water and was driven to ana about us. The boat ceased her rearing and plunging and rose and fell with the smooth and rythmic motion of a dory on the Georges. The transformation was sublime, almost awesome. One peaceful spot, one haven of rest in that tumult of waters.

Tendencies in Motor Construction.

By Arthur E. Palmer.

THE motor car, more than any other one thing, has been responsible for the rapid strides made recently in the motor boat field. Some motor makers have even gone so far as to speak of their engines as being of the "auto marine type," while many builders regularly install the so-called auto control, which, briefly speaking, consists of using a regular automobile steering wheel to operate the rudder and in placing the spark, throttle and clutch levers where they may all be in easy reach of the operator's hand. In fact, the advanced type of modern motor boat has every appearance of being an automobile on the water. The motor is now in such cases installed under the forward deck or hood, a feature which prevents the soiling of the cockpit and leaves it entirely clear of machinery.

In order to discuss the comparative merits of the various motors it is necessary to divide them into two classes, namely, the four-cycle and the two-cycle.

In point of mechanical design the four-cycle marine motor has changed but little in the last two or three years, although a few improvements have been added. The relation of bore and stroke seems to bear the same proportions and there is not such a great tendency toward the short stroke motor as there is in the automobile, because fuel economy is an important factor in marine engine construction. Marine engine makers favor the long stroke motor, which utilizes more of the gas energy than the short stroke motor. The area of the valves of the four-cycle type seems to be increasing and the lift decreasing in an effort to eliminate all objectionable noise and to relieve the valve springs of any unnecessary work. Detachable valve cages are being used more than ever and the convenience and accessibility they afford is unquestionable. The operation of grinding a valve is thus simplified and all valve and spring attachments are easily reached in case repairs are needed. Makers are also realizing the value of a combustion chamber without pockets, and some are placing the valves directly in the head of the cylinder and operating them either by push rods driven from a lower camshaft, or by supporting a camshaft at the top of the cylinders and driving the shaft either by bevel or spiral gears from the camshaft. The suction inlet valve is either a thing of the past or of the future—more likely of the past. The writer does not recall a single American motor which is using this type of valve although some prominent foreign makers are using it with good results. In high powered engines the tendency seems to be to increase the number of cylinders rather than to increase the bore.

The two-cycle motor, unlike the four, is still in a stage of metamorphosis, but it is being brought to a high stage of reliability, and engineers are devoting a great deal of attention to the perfection of two-cycle principles. There is a growing tendency to get away from crank case compression by closing the lower end of the cylinder and placing a stuffing box there through which the piston rod works in a manner similar to that in a double acting steam engine. The charge from the carbureter is drawn in below the piston and compressed in the usual manner. The degree of compression thus obtainable is far in excess of that of the ordinary crank case type of motor, and consequently gives a higher velocity to the bypass charge. One or two makers place a valve in the top of the piston to allow the crank case charge to pass through. Another provides cored passages in the piston that register with ports in the cylinder wall.

Various schemes are being employed to overcome the defects of the modern two-cycle motor, but there is yet a large field open to the designer. Backfiring is being taken care of by placing a fine wire gauze screen in the bypass or by giving to the exhaust port enough lead to overcome the tendency for it to shoot back into the bypass. There is a question as to whether the two or three port motor is the most prominent. There are good makes of both on the market and there are also good arguments in favor of each.

Accessibility seems to be a leading feature of all makes of motors of either the two or four-cycle type this season and centralized control also plays an important part. The reverse gear is fast becoming recognized as a part of the engine, and makers are now extending the engine bed to mount the reverse mechanism thereon, making the whole a solid, substantial power unit. The reversible propeller is used a great deal and those who desire this type of propeller will find the market plentifully supplied. One concern is putting out a reversible wheel which contains a set of bevel gears enclosed in the propeller hub and which is operated by an internal spindle passing through the center of the propeller shaft, thus eliminating the stuffing box.

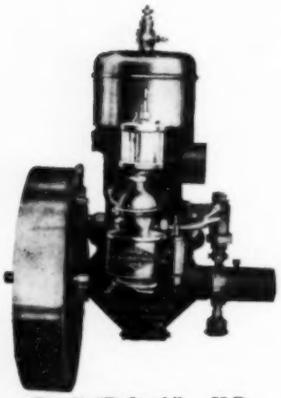
Reverse gear designers have not followed the automobile as might be thought, but seem to have set themselves up in a distinct class with the idea that the fundamental principles of transmission which apply to the automobile do not apply to the motor boat, with a result that with few exceptions the reverse gears offered today are clumsy, ill-proportioned and frightfully inefficient. It is surprising to note that after all the progress that the disc clutch has made, its principle is not used in marine reverse gears.

We seem to be following our foreign cousins in using the make-and-break system more this year than ever before. The magneto has

(*Continued on page 53.*)

Whirlwind—the triple screw, 111 foot high speed motor yacht of Julius Fleischman, N. Y. Y. C., designed by Chas. L. Seabury.

Features of 1909 Marine Motors



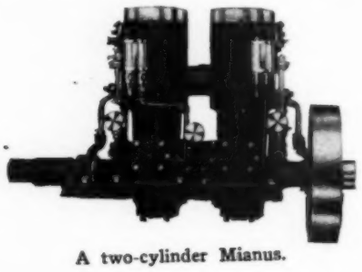
Thrall "Refined," 3 H.P.

Refined.—Thrall Motor Company, Detroit, Michigan. This is a two-cycle motor made in two models only, a single and a double-cylinder, each with 3½ inches bore and stroke. The single-cylinder motor is rated at 3 h.p. and weighs 60 lbs., or 72 lbs. with reverse gear and clutch. The double-cylinder model is rated at 6 h.p. and weighs 95 lbs. without the clutch and reverse gear and 110 lbs. with the gear. Features of construction and equipment include copper water-jackets, water-jacketed exhaust, a float-feed carbureter of special design and general lightness and simplicity of design and construction. The copper water-jacket is applied to the cylinder without the use of bolts, bands or compression rings and can be drained by a petcock on the intake connection.

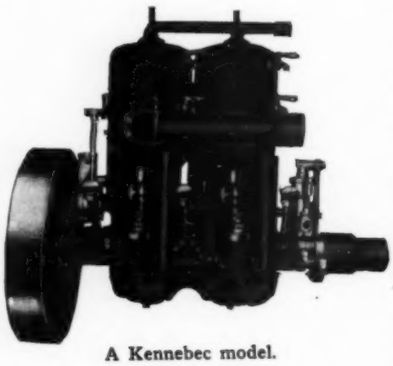
Kennebec.—Torrey Roller Bushing Works, Bath, Maine. Kennebec motors are of the two-cycle, two-port type, and are made in the following sizes, weights and prices: Single cylinders, 2 h.p., 132 lbs., $61; 3 h.p., 226 lbs., $76.50; 5 h.p., 297 lbs., $123; 2 cylinders, 4 h.p., 211 lbs., $132; 6 h.p., 305 lbs., $180; 10 h.p., 425 lbs., $298; 3 cylinders, 6 h.p., 286 lbs., $216; 10 h.p., 444 lbs., $323; 15 h.p., 613 lbs., $460. The single and double cylinder models are made with either jump spark or make-and-break ignition, but the 3-cylinder models are furnished with jump spark only. The Kennebec Fisherman is a special 8 h.p. single-cylinder model with make-and-break ignition weighing 610 lbs. and the price is $185. These prices are for engine outfits only and do not include electrical and propeller equipment.

Reeves-Graef.—Type G.—Trenton Engine Company, Trenton, N. J. These engines are of the heavy-duty, four-cycle type and are made in the following three models: 2 cylinders, 15 h.p., 1,500 pounds, $1,100; 3 cylinders, 23 h.p., 1,900 pounds, $1,450; 4 cylinders, 30 h.p., 2,300 pounds, $1,800. The cylinders are 6½ inches bore by 8½ inches stroke and the engine speed ranges from 100 to 450 revolutions per minute, the rated power being developed at 300 revolutions. The cylinders are cast separately and they, as well as all parts, are interchangeable, the crank shafts and bearings are unusually large, all valve lifts are of the adjustable type, the exhaust manifold is water-jacketed, lubrication is by a mechanical oiler and either make-and-break or jump spark ignition is supplied.

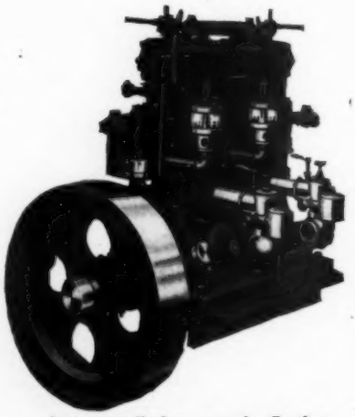
Mianus.—Mianus Motor Works, Mianus, Connecticut. Mianus motors for 1909 are practical duplicates of last year's models, except that some of the parts have been given additional strength by the use of higher grade material, the crank shaft forgings are of nickel steel, instead of carbon steel, the main bearings are of phosphor bronze, and tool steel parts have replaced those of ordinary steel. These motors are of the two-cycle, two-port type with make-and-break ignition and are made in the following sizes and prices: Single cylinder, 3 h.p., $85; 5 h.p., $110; and 7½ h.p., $150; double cylinders, 6 h.p., $185; 10 h.p., $235; 15 h.p., $310. These prices do not include propeller and battery outfits, or the gasoline tank, pipe and fittings, which are extra.



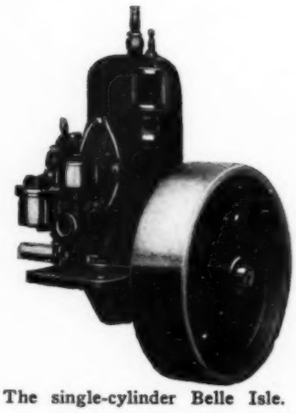
A two-cylinder Mianus.



A Kennebec model.



A two cylinder, 2-cycle Cooley.

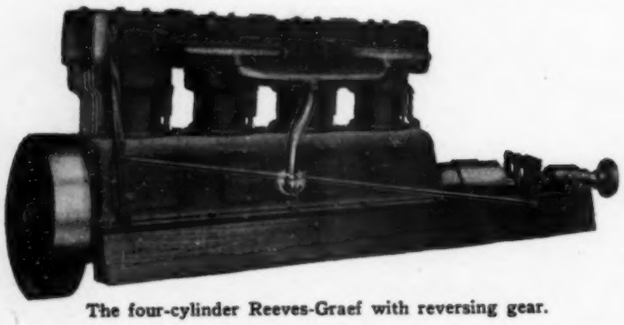


The single-cylinder Belle Isle.

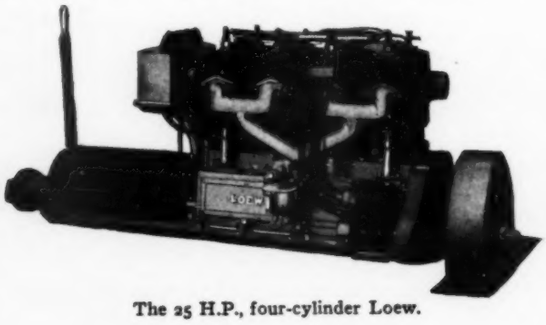
Belle Isle.—The New Belle Isle Motor Company, Detroit, Michigan. These two-cycle motors are made in four sizes only as follows: No. 1, single cylinder, 2 to 2½ h.p., $23; No. 2, single cylinder, 4 to 5 h.p., $46; No. 3, double cylinder, 5 to 6 h.p., $67.50; No. 4, double cylinder, 9 to 10 h.p., $117.50. These prices are for the bare engine only in each case, an additional charge being made for all fittings and attachments. Features of construction include direct acting vertical plunger pump, elevated commutator and the "Bimco" float feed carbureter. The Number 3 and Number 4 models are made with the cylinders cast in pairs.

Cooley.—Cooley Manufacturing Company, Waterbury, Vt. Cooley motors are of the two-cycle, two-port type and are built in low-speed medium weight models of 5 h.p. and upward. The 5 h.p., models can be furnished with either integral or detachable heads, but all sizes above 5 h.p. are made with the detachable head only. The 5 h.p. model may be combined to make 2 cylinders, 10 h.p., 3 cylinders, 15 h.p., or 4 cylinders, 20 h.p. models. Either make-or-break or jump-spark ignition is supplied as may be desired. The water circulation is very complete, including the water-jacketing of the exhaust and the muffler. Lubrication is by a force feed lubricator and compression grease cups, on the smaller sizes and by a multiple feeder on the larger sizes.

Loew.—Loew Manufacturing Company, Cleveland, Ohio. This motor is notable because of the fact that it is made in only one size, a four-cylinder, four-cycle model of 25 h.p. The cylinders are 4¾ inches bore and 5½ inches stroke and are cast separately with the valves upon opposite sides. The crank-shaft has five main bearings. The exhaust manifold is waterjacketed. The intake manifold and all water connections are cast brass. Lubrication is by a mechanical force-feed oiler and ignition by jump spark with magneto. The reverse gear is a special model and is mounted upon the base with the motor. The air pump for the whistle is direct connected. The speed raneg is from 150 to 1500 revolutions per minute. The weight with cast iron base is 900 lbs. and with aluminum base 650 lbs.



The four-cylinder Reeves-Graef with reversing gear.



The 25 H.P., four-cylinder Loew.

New Things for Motor Boatmen.

New Attachments and Accessories That Are Offered to the Man with a Boat. The Month's Production of Devices Designed as Aids to Motor Boating.

[Under this heading will appear each month descriptions and, whenever possible, illustrations of the various devices designed to add to the pleasure and comfort of motor boating which have been brought out since the previous issue. It should be kept in mind that the department in any one issue is, as it were, only one month's instalment of the many useful things on the market, and that it will be well to consult the previous issues of MOTOR BOATING which will form, together, a very complete illustrated directory of the things the motorboatman needs.—In writing the makers of the articles shown, if our readers will mention MOTOR BOATING they will receive special attention.]

Fig. 1.—Skene Chock.

Skene Chock (Fig. 1).—A. S. Morss Co., Boston, Mass. This chock is the invention of Norman L. Skene, and is patented. Its construction is such as to prevent the accidental disengagement of the rope while in a seaway, while on the other hand it can be easily engaged. The chock is made this season with ball points which add greatly to its efficiency, as they make it impossible for the rope to catch on the points. Bow chocks are made in sizes from 4½ inches to 17 inches in length, and range in price from 40 cents up per pair. The stern chocks are made in sizes from 4 to 16 inches, and at prices from 25 cents up.

* * *

Fig. 2.—Orswell Igniter Plug.

Orswell Igniter (Figs. 2 and 3).—Orswell Igniter Co., 192 Commercial St., Boston, Mass. In this system of jump spark ignition, the spark plug and the induction coil are combined, the coil being encased in heavy mica and hermetically sealed. Outside of this is a brass casing which protects and supports the whole. There is no ground connection of the secondary terminals, but these are connected inside directly to the sparking points, thus making a double pointed plug. In consequence of this construction, there is no high tension current except at the sparking point and there can be no leakage or short circuits from any cause, as the exposed wires and connections carry the low tension current only. The vibrator and the condensor are combined in a small brass box which may be placed in any convenient location. The price ranges from $12 to $39, according to the number of cylinders.

* * *

Fig. 3.—Orswell Ignition Vibrator and Condenser.

Jeffery's Special Marine Glue (Fig.—).—L. W. Ferdinand & Co., 201 South St., Boston, Mass. A puncture or leak in a small boat or canoe can be repaired in five minutes by the use of this special waterproof glue, which becomes soft and pliable under heat. For quick repairs it may be used without heat in a temperature of 70 degrees or upward. It is put up in friction top emergency cans at 25 cents each, or by mail 50 cents, and is for sale by all sporting goods, yacht and supply houses. A sample with directions for use will be sent free upon application to the makers.

* * *

Fig. 4.—Brown's Top Bows.

Wooden Bows for Motor Boat Tops—(Fig. 4).—S. N. Brown & Co., Commercial St., Dayton, Ohio. This firm is making wood bows for tops for motor boats, and can furnish several different styles. The one herewith shown is a long bow fitted with brass slat irons. This can be furnished either in the straight pattern or with 3-inch offset at bottom, or, if preferred, the short bow can be furnished to be used in connection with leather covered sockets. The price, fitted with solid brass slat iron is $18 a set.

* * *

Fig. 5.—Auto-Pneumatic Life Preserver.

Auto-Pneumatic Life Preserver (Fig. 5).—Auto-Pneumatic Life Preserver Co., 309 Broadway, New York City. This life preserver is patented and consists of a strong durable waterproof canvas shaped like a belt and having curved rattan ribs sewed inside it. There is also a non-corrosive automatic air valve, and at each end a buckle or a ribbon strap. The life preserver may be fastened securely with the buckles or straps under the arms, and will fill itself automatically with air through the valve as it is distended by the rattan ribs, after which the valve will close. When not in use the life preserver is collapsible and may be folded into a small package and carried in the coat pocket, as it weighs less than a pound. Price $3.

* * *

Parker Air Compressor (Fig. 6).—Brunner Manufacturing Co., Utica, N. Y. This compressor is designed for use in compressing air for whistle tanks and is fitted with a friction clutch. The lever for engaging the clutch is made of bronze, and has a highly polished handle which adds to the appearance of the machine. Provision is made so that the clutch lever can be on the side nearest to the operator, in whatever position the compressor may be set. Every clutch is tested to start the compressor under a full load of 200 lbs. pressure at full speed. Ample provision is made on all working parts for taking up wear and the tension may be easily adjusted for any desired pressure. Price with clutch, $25.

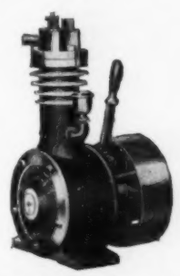


Fig. 6.—Parker Air Compressor.

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Durkee's Patent Key Deck Plate (Fig. 7).—Charles D. Durkee & Co., 2 & 3 South St., New York City. Much annoyance and loss is frequently caused motor boat owners by the stealing of gasoline from the fuel tanks of boats left at moorings without anyone on board. To prevent this loss is the object of this deck plate. It is very simple in construction, having no threads to strip or cut the hands, and the screwheads are covered so that the plate cannot be removed when closed. It is very simple in operation, as it springs in place without the necessity of finding threads, holes or grooves and cannot be opened without the keys.

Fig. 7.—Durkee's Key Deck Plate.

* * *

Morse Search Lamp (Fig. 8).—Frank W. Morse, 516 Atlantic Ave., Boston, Mass. This lamp is known as Style No. 21, and is designed to use current from a battery. The outfit consists of the stand, aluminum reflector, pull chain, socket, 6 volt 4 candle power tantalum lamp, cord and terminals. The stand may be attached to the deck of the boat by screws, and the rod of the lamp may be unscrewed from the bottom socket when it is desired to remove the lamp. A tilting and swinging joint allows the light to be projected in any direction. This lamp will throw a light about 100 feet, and will be very useful in making landings, etc. Price complete, $3.50.

* * *

"Thermex" Odorless Free Exhaust Silencer (Fig. 9).—Thermex Silencer Works, 85 Sumner St., E. Boston, Mass. The Thermex has an unobstructed exhaust inlet of increasing area leading to an expansion chamber of ample size. Over this inlet nozzle to the expansion chamber is placed an umbrella-shaped deflector, which discharges the exhaust gases around its edge. All circulating water from the engine is delivered over the center of this umbrella deflector, from the edge of which the water flows in a thin sheet, causing a perfect mixture of water and exhaust gases, and thereby reducing the temperature and volume of the exhaust gases to the lowest degree. The device is made in five sizes, from 1¼ to 3 inches exhaust pipe diameter, and the prices range from $8 to $25.

Fig. 8.—Morse Search Lamp.

Fig. 9.—"Thermex" Free Exhaust Silencer.

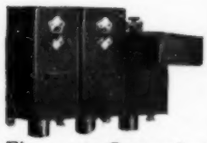

Fig. 10.—Connecticut Marine Coils.

Fig. 11.—Willard Electric Head Light

Fig. 12.—Willard Electric Side Light.

Fig. 13.—Willard Electric Riding Light.

Fig. 14.—Dixie Air Compressor.

Fig. 15.—Roper Safety Propeller.

Connecticut Marine Coils (Fig. 10).—Connecticut Telephone & Electric Co., Meriden, Conn. These well known makers of ignition apparatus have now brought out a covered coil for marine use for single cylinder motors. These may also be coupled for use with any number of cylinders, as shown in the illustration. The cases are made of hard wood with spar varnish finish, and all metal parts are nickeled except the vibrator and armature which are treated with a rustproof finish. Both the vibrator and the contact adjusting screws are self-locking and will stay in any position without any possibility of their jarring loose. The contact screw has a patented dial adjustment. The price is $9 without the switch, and $10 with the switch.

* * *

Electric Running Lights (Figs. 11, 12 and 13).—Willard Storage Battery Co., Cleveland, Ohio. Included in the complete line of boat lighting specialties manufactured by this company are the running lights illustrated herewith. All three of the regulation lamps required, namely, headlight, sidelights, and stern light are made with Tungsten lamps having a brilliant light which brings out the colors of the side lights very clearly. They are also made to permit the use of oil when so desired. For their operation by electricity the company furnish a modified Pullman car lighting battery known as their type Elb, and they are also prepared to furnish complete lighting installations using their standard 6-volt batteries with higher voltage lamps.

* * *

Blachford's "Thermodry" Decarbonizer—National Standard Selling Co., Produce Exchange, New York City. A chemical compound for removing carbon from the interior of the cylinders of a gasoline motor, made in the shape of a dry powder, and said by the makers to be the only chemical compound which attacks lamp black carbon. It is applied by running the engine until hot, removing a spark plug and pouring a tube of the compound into the cylinder. The engine is then run for a few moments with the throttle open and the spark retarded and then another cylinder is treated in the same manner, until all are cleaned. The price is $1.50 for a box containing eight charges.

* * *

Indestructibilite.—Indestructibilite Metal Co., 50 Church St., New York City. It is claimed that this metal will not melt or scale at a temperature of 2,500 deg. F., also that it will neither rust, discolor nor corrode. It can be spun, drawn, soldered and electricity welded and finishes like nickel plating except that the finish never wears off because of the solidity of the metal. It is lighter than copper, has a tensile strength of 100,000 pounds per square inch, and resists the action of acid and alkaline solutions. It is not tarnished by salt water and consequently is well adapted for use in boat trimmings. The price in small quantities is 29 cents a pound in sheets of standard thickness.

* * *

Dixie Air Compressor (Fig. 14).—John H. Thompson & Co., 650 Woodward Ave., Detroit, Mich. These compressors are especially adapted for use in connection with whistle tanks on motor boats and are made in two sizes. Model A is 2 inches bore and 3 inches stroke, and is equipped with a pulley 2½ by 6 inches. The weight is 20 lbs., and the price is $20, or with the complete outfit consisting of compressor, chime whistle, air gauge and 10 gallons seamless steel tank, $32.50. Model B has a cylinder of 1½ inches bore and 3 inches stroke, with tight and loose pulley, 7 inches in diameter, and the price is $10, or with the same outfit as Model A, $22.50. The latter outfit is recommended for boats under 40 feet in length.

* * *

Roper Safety Propeller (Fig. 15).—C. F. Roper & Co., Hopedale, Mass. As installed, this propeller consists of a propeller shaft upon which is set a reversing lever and a specially constructed propeller having four blades. These blades are locked into a two-part hub by the shaft itself, and cannot drop off or be taken off unless the entire propeller is removed from the shaft. The propeller shaft turns directly with the engine shaft, and the reverse lever governs the movable hub and through it adjusts the pitch of the propeller blades. The speed and direction, either forward or astern, are governed by the position of the blades, the engine load remaining practically constant.

"Never-Miss" Spark Plug (Fig. 16).—Never-Miss Spark Plug Co., Lansing, Mich. This spark plug is made for either battery or magneto use. For magneto use only porcelain cores are fitted. They are guaranteed for one year and cost $1.00 each. The "Never-Miss" number 8 plug is made with either porcelain or mica installation and is also guaranteed for the same period and sells for the same price. The makers guarantee that these plugs cannot short circuit or soot over. They are made in ½-inch, metric, A. L. A. M., and ⅞-18 Winton types and sizes. The body is made of steel and the central insulating portion is retained by a large bushing.

* * *

Ellsworth Double Cylinder Air Compressor (Fig. 17).—Ellsworth Foundry and Machine Works, Ellsworth, Me. This is a very compact friction or belt driven air pump, arranged to be easily attached to any form of motor and can be started and stopped by the small lever shown in the illustration. It is arranged to pump 60 lbs. pressure, but can be furnished to pump up to 150 lbs. pressure, and as it is impossible to exceed the pressure for which the machine is designed, there is no need for a pressure gauge and safety valve. Each cylinder is 1½ inches bore and 2⅛ inches stroke, and the pulley is 7 inches in diameter and will run up to 1,200 revolutions. The price complete with pulley is $15.

* * *

Cartridge Coil (Fig. 18).—Cartridge Coil Co., 39 Mechanics St., La Fayette, Ind. The Cartridge type G coil shown herewith is so designed as to be able to withstand the heat of the motor and can be attached directly to the cylinders if so desired, thus making the high tension cable connections very short and direct. The case of the coil is of metal and is furnished with either brass, nickel or oxidized copper finish. The cover is close fitting and protects the vibrator parts from water, dirt or accidental disarrangement. It is attached by a bayonet lock which makes the joint very tight. This coil has been adopted by the Gray Motor Co., and other well known makers of marine motors.

* * *

Morse Inspection Lamp (Fig. 19).—Frank W. Morse, 516 Atlantic Ave., Boston, Mass. Known as Style No. 23, this lamp is intended for the inspection of the interior of the cylinders and other small places about a motor. The 4 candle power tantalum lamp is provided with a wire guard and silvered reflector and the handle is bent just back of the socket and terminates in a hard rubber grip through which the wires to the battery are led. The ends of the wires are provided with spring snap terminals. The price complete is $2.50.

* * *

"Radium" Storage Battery (Fig. 20).—General Accumulator and Battery Co., 134 Second St., Milwaukee, Wis. The cut illustrates the number 66 battery. The thickened upper edge of the main containing case is provided with a tongue extending completely around the upper edge, and over this tongue fits a groove cut in the heavy edge of the cover. The plates, top connections and posts are cast in one piece, and the construction of the vent plugs is such that splashing of the electrolyte is impossible. The posts are ½ inch in diameter and the top screws are ⅞ inch, made of the best hard rubber. All parts are interchangeable. No fastening screws are used for the cover. These batteries range in price from $12 to $30, for 4 volt 40 ampere, to 6 volt 80 ampere hours sizes.

* * *

Motor Boat Tool Kit (Fig. 21).—Gray Motor Co., Detroit, Mich. Eighteen tools in a canvas cover, with a place for each tool, are offered complete for $4. The list is as follows: 8 in. Stillson wrench; 8 oz. machinist's hammer; 6 in. combination pliers; 8 in. monkey wrench; 10 in. flat mill file; 1 double end S wrench for ⅜ and 7-16; 1 double end S wrench for ¼ and 5-16; 1 double end S wrench for ½ and ⅝; 2 in. screw driver; 4 in. screw driver; ⅝ in. cold chisel; ¾ in. cold chisel; 1 octagon prick punch; 5 in. slim taper file; 6 in. round file; 1 file handle; 1 coppered steel oiler, 8 in. hacksaw; 1 cover.

* * *

Willet Automatic Multiple Jet Carbureter (Fig. 22).—Willet Engine and Carbureter Co., 764 Ellicott Square, Buffalo,

Fig. 16.—"Never-Miss" Spark Plug.

Fig. 17.—Ellsworth Double Cylinder Air Compressor.

Fig. 18.—Cartridge Coil.

Fig. 19.—Morse Inspection Lamp.

Fig. 20.—"Radium" Storage Battery

Fig. 21.—Gray Motor Boat Tool Kit.

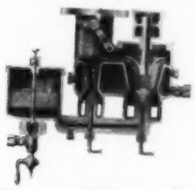

Fig. 22.—Willet Automatic Multiple Jet Carbureter.

N. Y. As will be seen from the sectional view of this carbureter, there are in reality two carbureters, a small one for low speed running and for small throttle openings, and a larger one which is called into action as the demand for mixture exceeds the capacity of the other. Under full throttle conditions, both sections of the devices act together. The initial air and fuel feeds are separately adjustable, as is also the tension of the spring which determines the suction necessary to cause the larger part to act. The mixing chamber is thoroughly waterjacketed, and the float chamber is fitted with priming pin and drain cock. Prices are from $25 to $40 in 1¼ to 2 inch sizes.

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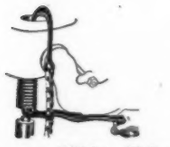


Fig. 23.—White Valve Remover.

White Valve Remover (Fig. 23).—S. B. White Co., 91 Sabin St., Providence R. I. The method of using this tool is illustrated in the accompanying illustration. After the valve nut is unscrewed and removed from the engine cylinder, the hook portion of the tool is set so that it bears against the upper surface of the valve. The forked end of the lever handle is then inserted under the valve spring retaining washer, and one of the chain links inserted into the slot in the middle in such a position that the grip of the handle is somewhat higher than the yoke end. Pressure upon the handle then lifts the spring and frees the retaining key. The use of a chain to carry the fulcrum of the lever makes it possible to get around piping, etc.

* * *

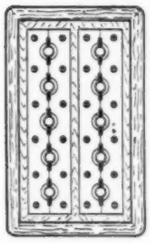


Fig. 24.—"Loxit." Front view.

"Loxit" (Figs. 24 and 25).—Loxit Motor Lock Co., North Tonawanda, N. Y. These locks are designed to be inserted into the primary circuit of the ignition system in some convenient place, either on a bulkhead, in a locker or elsewhere for the prevention of theft. The series of handles shown represent a series of contact switches, the contact bars of which can be set in any position desired with reference to the handles. The contacts are on the back and the handles on the face of the device. In order that the boat may run, it is necessary that all the switches be in contact position, and by changing the contacts on the handles a great many combinations may be worked out. Prices, $15 and $25.

* * *

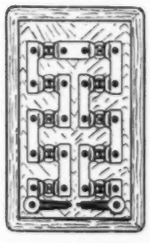


Fig. 25.—"Loxit." Back view.

"Auto-Tank" Gasoline Storage.—Weber Sales Co., 941 Monadnock Block, Chicago, Ill. In the "Auto-Tank" system, the gasoline is stored underground in a cylindrical tank made from heavy, galvanized steel plate with double seamed and riveted joints and connections. All joints and seams are soldered in addition to the riveting. The piping is of flexible lead alloy and the air pump is of heavy seamless brass tubing with ball valves. The pump is located within the boathouse as well as the valve in the gasoline line from the tank. Upon pumping up a little pressure in the underground tank, the discharge valve can be opened and the tanks filled with ease and absolute safety.

* * *

Fig. 26.—Misch Valve Grinder.

The Misch Valve Grinder (Fig. 26).—Misch & Merryweather Machinery Co., 707-715 Lakeside Ave., Cleveland Ohio. The machine shown in the accompanying cut is designed for the rapid seating of engine valves in the process of manufacture. One end of the pulley spindle is provided with a crank disc from which a rod with gear rack attached is given a reciprocating motion. Meshing with this rack is a spur pinion on a hollow spindle, within which is splined a second spindle operated vertically in the same way as a drill press spindle. The lower end of the gear spindle is fitted with a taper socket into which can be inserted the tool for engaging the valve to be ground.

* * *

Fig. 27.—"Hycap-Exide" Battery.

"Hycap-Exide" Storage Battery (Fig 27).—Electric Storage Battery Co., Allegheny Ave. and 19th St., Philadelphia, Pa. This battery differs from the "Exide" chiefly in the matter of the form and weight given the individual plates. The "Hycap-Exide" cells are composed of a greater number of plates each than the "Exide," this giving the battery a greater total capacity for charge and discharge, at the same time, because of the reduced thickness of the individual plates, reducing the capacity of each. Aside from the above matter of increased number of thinner and higher plates per cell, the details of construction and methods of manufacture are identical and of the same high grade.

"Best" Spark Plug (Fig. 28).—Best Ignition Equipment Co., 200 West 64th St., New York, N. Y. In this plug the inner end of the central electrode is in the form of a button with its edge presented to the inner wall of the main spark plug body, thus forming an infinite number of points from which the spark can jump from one to the other. In addition to this feature, means are provided whereby the difference in the rates of expansion of the central electrode and the porcelain insulator is compensated for, so that plug breakage from this cause is obviated. The plugs are well finished and are retailed for $1.50 each.

* * *

Fig. 28.—"Best" Spark Plug.

"C. M. B." Adjustable Socket and Ratchet Wrench (Fig. 29).—C. M. B. Wrench Co., Industrial Building, Syracuse, N. Y. In the cut herewith is shown one of the very many ways in which this wrench is of use in reaching inaccessible places. The universal motions provided permit of operation at almost any angle, and the ratchet allows of fully tightening or unscrewing a nut or bolt without disengaging the wrench. The outfit includes sockets for bolts and nuts from ¼ to ¾ inches, a ratchet screwdriver and a ratchet drill. The price complete, with all parts nickel plated, is $8.50.

* * *

Fig. 29.—"C. M. B." Adjustable Socket Wrench.

Hubbard Gasoline Tank Gauge (Fig. 30).—H. W. Hubbard, Middletown, Conn. This gauge is so arranged as to give accurate readings indicating the quantity of gasoline within the tank. As shown in the cut herewith of the connections, the regular fuel supply pipe for the carbureter is led from the bottom of the tank in the usual manner, but at the point where it passes beneath the gauge a shut-off cock is provided, which permits of connecting the carbureter pipe line with the lower end of the gauge. The top of the gauge is fitted with a small spring return check valve and upon pressing down the stem of this valve the air pocketed in the gauge is released and the gasoline rises to the same height as that in the tank.

* * *

Fig. 30.—Hubbard Gasoline Tank Gauge.

Sangamo Ampere-Hour Meter (Fig. 31).—Sangamo Electric Co., Springfield, Ill. This ampere-hour meter is a modification of this company's well-known watt-meter and, as its name implies, is intended to record the ampere-hour of current flow in direct circuit independently of the voltage, and is therefore particularly adapted for use with storage batteries wherever employed. It, like the watt-meter mentioned, is of the mecury motor type, but modified by the introduction of a powerful permanent magnet for the driving field. In capacities above 100 amperes in the auto and service types, the meter is operated with an external shunt like an indicating ammeter. Prices range from $50 to $180.

* * *

Fig. 31.—Sangamo Ampere-hour Meter

"Safety" Offset Junior Motor Clock (Fig. 32).—Manasseh Levy Co., 182-184 Broadway, New York City. This company manufactures motor clocks in a variety of styles and sizes, of which we herewith illustrate the so called "Safety" Offset Junior. This particular clock is made in three grades, two of which are one day devices listing at $8.50 and $12.00, respectively. The difference in price is due to the difference in the qualities of the movements, the higher priced clock being fitted with seven jewels. The highest of the three grades of Juniors is a specially jewelled device with an eight day movement, and lists at $23.50.

* * *

Fig. 32.—"Safety" Offset Clock.

"Noflux" Aluminum Solder.—Electric Maintenance & Repair Co., 200 Market St., Newark, N. J. As its name implies, this material is used without a flux, the operation of soldering being performed by the use of an ordinary torch or gas flame, and being actually a soft brazing. The solder is made up in two sizes, selling for 25 cents and 50 cents, and weighing 20 and 8 to the pound, respectively. The company also manufactures a solder called "Rheinhold" for soldering aluminum to other metals. It is sold in a 25 cent size only, weighing 18 to the pound.

* * *

Fig. 33.—New can for Panhard Oil.

"Panhard" Oil (Fig. 33).—George A. Haws, New York City. This well known oil is now being put up in a new style can with a sealed spout, which makes it more convenient to carry. The familiar red and white checkerboard pattern is retained.

Motor Boat Club of America, New York City.—Definite announcement has been made that there will be no race this year for the British International trophy, held by the Motor Boat Club of America, and defended last year by Dixie II. The Motor Yacht Club of Great Britain sent a challenge last winter, but have not followed it up with any actual entry.

* * *

Albany Yacht Club, Albany, N. Y.—The "capital to coast" cruiser race, July 5 and 6, went to S. W. Granbery's Irene II, the well known Marblehead racer, which covered the 118.2 nautical miles from Albany to New York in 14 hours, 25 minutes actual time, making an average speed of 9.5 miles an hour. The conditions were similar to those for the Marblehead race, entries limited to strictly cruising boats. Five boats started off the Albany Yacht Club house at 4:30 P. M., July 5. Irene II finished off the Colonial Yacht Club house, West 138th St., New York, at 6:55 A. M., July 6, and won the handsome shield given by Thomas Fleming Day. Snapshot, the scratch boat, hung up on a sand bar for two hours. The summary:

Boat.	Finish H.M.	Elapsed Time. H.M.	Correct. Time. H.M.
Irene II (S. M. Granbery), Colonial Y. C.	6.55A.M.	14.25	13.49
Nomad (Percy C. Jones), Toledo Y. C.	7.31	15.01	14.23
Mary (W. M. Murphy), Colonial Y. C.	9.22	16.52	15.52
Dolphin (Charles Munsall), Albany Y. C.	11.38	19.08	17.07
Snapshot (J. B. Linderman), Colonial Y. C.	10.18	17.48	17.48

* * *

New York Motor Boat Club, New York City.—The long-distance race of 270 miles from New York to Albany and return was won by Martha, owned by P. Kossek, on time allowance. Fifteen motor boats started from the Motor Boat Club's house at the foot of West 147th St., at 7 P. M., on July 3. The turning mark was off the house of the Albany Yacht Club, and the boats finished in New York early in the morning of July 5. Elmo II made the best actual time over the course, taking 15 hours, 38 minutes, to go up the river, and 15 hours, 12 minutes, to make the homeward journey, and won the time prize and also second place in the race. Third prize went to Plough Boy. Martha, the winner on corrected time, was the second boat to cross the finish line. The prize for the first open boat to finish went to Bunk II. The rules of the A. P. B. A. governed the race. The summary:

Boat. Owner.	Allowance	Elapsed Time...	Corrected Time...
Martha (Paul Kossek)	8.12	32.45	24.33
Elmo II (F. Giles)	6.02	30.50	24.48
Plough Boy (A. Sauer)	8.23	33.26	25.03
Polar Star (R. Croft)	8.55	36.30	27.35
Jolly Roger (F. Horenburger)	4.09	33.46	29.37
*Bunk II (Meakim & Firth)	4.37	34.50	30.13
*Imp (A. Haas)	8.52	40.10	31.18
Reta (C. C. Trede)	5.13	36.34	31.20
Juliet (P. Detering)	4.02	36.15	32.13
*Anna (E. T. Woodward)	3.26	36.46	33.20

*Indicates open boats.
Ida F., Talequah, Francesca and Consort did not finish.

* * *

New Orleans Motor Boat Club, New Orleans, La.—This club has been recently organized by motor boat owners in the vicinity of New Orleans, and the following officers have been elected: Commodore, Thomas Sully; vice-commodore, Ernest Jahncke; rear commodore, Albert Mackie; secretary, W. L. Howell; treasurer, E. M. Toby; fleet captain, Dr. S. S. Grosjean. Charles Farwell is chairman of the committee on by-laws and constitution. The club starts off with a membership of 150, almost all of whom are members of the Southern Yacht Club, but the motor boat enthusiasts think that their special interests will be better cared for by a purely motor boat club. A site for a club house will be chosen immediately, and the erection of a club house begun. A regatta has already been planned, and three silver cups given for prizes.

* * *

Thousand Island Yacht Club, Alexandria Bay, N. Y.—Announcement has been made that the races for the Gold Challenge Cup of the American Power Boat Association will be held in Alexandria Bay, August 19, 20, and 21. No entries have been announced yet, but no doubt several of the fastest motor boats in the United States will be seen in these races. Last year the cup was raced for on Chippewa Bay, but the victory of Dixie II brought the Gold Cup into the custody of the Thousand Island Yacht Club, which will probably make every effort to defend the cup successfully this year.

* * *

Waterway League of Greater New York and Long Island.—The first race meeting of the League was held July 10, at Rockaway Inlet, Jamaica Bay. At a dinner given by the President, Major Gilman, after the races, there were 300 guests present, including representatives of all the clubs in the neighborhood of New York, naval officers, and engineers interested in the Jamaica Bay improvement project. Royal Flush won the race for cruising power boats, in which there were seven entries. Six cabin power boats entered in Class K, to race over a six-mile course. The Counsellor won this race, and Laura Dean proved the winner of Class F for open motor boats, with six entries.

* * *

Buffalo Motor Boat Club, Motor Island, Buffalo, N. Y.—The club's house on Motor Island in the Niagara River was totally destroyed by fire on July 17, causing a loss of about $25,000. The members will rebuild their house as soon as possible, but in the meantime enjoy the privileges of the Buffalo Launch Club's house on Grand Island, which were extended to them by Commodore Fenster of the Launch Club. The Buffalo Motor Boat Club has won its fight to be allowed to construct a dock at the foot of Austin St.

* * *

Pacific International Power Boat Association.—The 225-mile cruising race of the association, from Vancouver, B. C., to Seattle, on June 30, was a sweeping victory for the American entrants, as twelve of them finished ahead of four Canadian boats that completed the course. A Seattle boat, Soya, Captain Edgar Ames, was the winner, covering the 225-mile course, in heavy weather, in 21 hours, 31 minutes—an average speed of 10.71 miles per hour. Sunset of Seattle, owned by Captain F. H. House, finished 49 minutes later. Mrs. James Wood's Clansman took third place. Another woman, Mrs. Helen Bull, handled New Zealand, a British Columbian entry.

* * *

Seattle Motor Boat Club.—The races held by this club on Lake Washington, Seattle, July 3-10, in connection with the Alaska-Yukon-Pacific Exposition, drew almost a hundred speedy motor boats of the Coast. The feature of the racing was the performance of Wolff II, which claims a new world's record. Wolff II, built by J. E. Wolff of Portland, and owned by Captain Wolff and E. W. Spencer, covered three laps of a circular 10-mile course in the remarkable time of 56 minutes, 25⅕ seconds for the 30 miles. Wolff II rates in the 12-metre class, has a length of 39 ft. 9 in., beam 5 ft., and is powered with a 110 h. p. six-cylinder Smalley engine, 5½ in. bore by 5½ in. stroke.

* * *

Ocean City Yacht Club, Ocean City, N. J.—A fine lot of boats came out for the 10th annual regatta of the club, on Great Egg Harbor Bay, July 15, 16, and 17. On the first day, the cruising motor boat race over a 15-mile course, in which ten boats entered, was won by J. G. N. Whitaker's Ilys, the Bermuda racer. The summary:

	Start.	Finish.	Elapsed Time.	Correct. Time.
Ilys	3.06.02	4.51.22	1.45.20	1.37.07
Phantom II.	3.42.06	4.57.34	1.53.08	1.38.34
Vincent	3.42.00	4.56.21	1.52.01	1.39.07

On the 17th, E. J. Schroeder's Dixie II ran six trials of a mile each, three with and three against the tide. She lowered her own record, going at the rate of 35.54 miles per hour. The other races resulted as follows:

SPEED BOATS, CLUB COURSE, 15 MILES.

Boat.	Start.	Finish.	Elapsed Time	Correct. Time.
Alaraf	3.34.56	4.06.30	31.34	30.20
Meteor	3.34.42	4.06.12	31.30	30.40
Splinter	3.34.46	4.09.13	34.27	31.58
Slick	3.34.45	4.17.20	42.35	35.54
Jersey Devil.	3.35.20	4.30.25	55.05	37.59
Vivien	3.34.47	4.54.17	49.30	43.32
Ariel	3.34.32	4.28.35	54.03	47.09
Junior	3.34.18	4.54.15	49.57	49.57

STANDING CABIN POWER RACE, CLUB COURSE.

Jesse Royal	2.09.05	3.14.25	1.05.20	58.45
Bessie Y.	2.08.34	3.31.31	1.24.57	1.02.52
Alice	2.08.16	3.14.14	1.05.58	1.05.58

SPEED BOATS, OPEN RACE. FREE-FOR-ALL, CLUB COURSE.

Alaraf	4.42.23	5.14.05	31.42	31.42
Splinter	4.42.17	5.16.23	34.06	34.06

OPEN LAUNCHES, CLUB COURSE.

Katherine	1.50.20	3.20.47	1.30.27	55.31
Har. Master.	1.50.45	3.19.13	1.28.28	50.11
Shrimp	1.50.23	3.21.35	1.31.12	59.12
Mabel	1.50.36	3.17.06	1.26.30	1.02.10
Viking	1.51.01	3.19.50	1.28.49	1.02.12
Mabel R.	1.51.24	3.06.26	1.15.02	1.03.42
Crest	1.50.35	3.21.07	1.30.32	1.04.33
Breakers	1.50.57	3.20.08	1.29.11	1.00.32
Seedee	151.36	3.19.40	1.26.11	1.11.02
Gurdon	1.50.22	3.22.10	1.32.48	1.11.06
Dash	1.50.21	Did not finish.		

CABIN CRUISERS, CLUB COURSE.

Estelle	4.04.03	5.21.50	1.17.47	55.58
Ilys	4.03.44	5.07.37	1.04.53	1.00.12
Phantom II.	4.03.49	5.15.12	1.11.23	1.03.38
Luegeo	4.04.41	5.16.55	1.12.14	1.05.42
Empress	4.03.54	5.12.54	1.09.00	1.09.08
Sunbeam	4.04.08	5.21.41	1.17.33	1.11.30

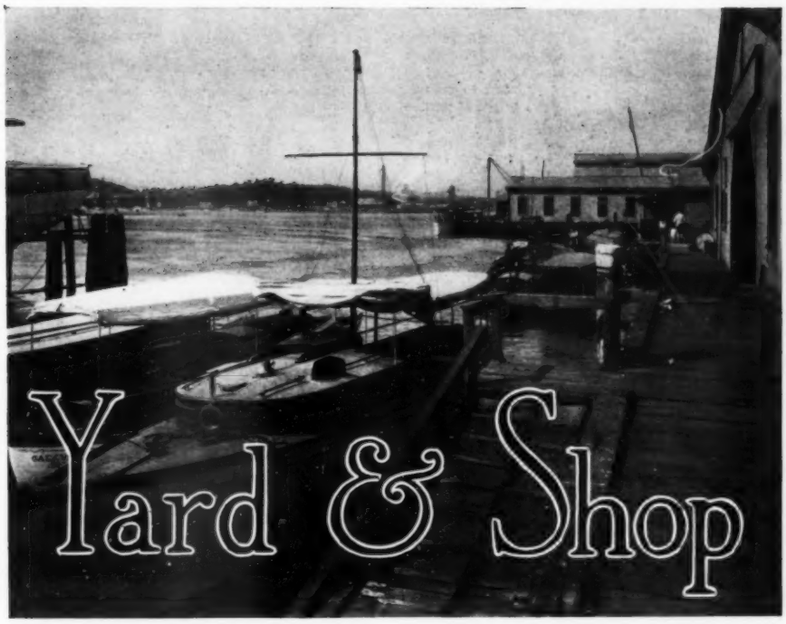
* * *

Illinois Valley Yacht Club, Peoria, Ill.—The Illinois Valley Club will have the running of the regatta of the Western Power Boat Association on August 17 and 18. This meeting seems likely to attract a large number of speedy boats. The most important event will be an open race for speed boats measuring 40 feet and under, without handicap, for which a first prize will be offered of $500 in cash and a silver cup valued at $250. The races will be sailed on Peoria Lake. The Western Motor Boat Association will cruise in force to Peoria to attend the Power Boat Association's races, leaving Chicago August 14.

* * *

Old Town Motor Boat Club, Old Town, Maine.—The club has elected the following officers at its annual meeting: Commodore, E. M. White; vice-commodore, Bert Estes; treasurer, F. J. Perkins; secretary, W. E. Hellenbrand.

(Continued on page 53.)



General Trade News.

Cleveland Wire Spring Company, Cleveland, Ohio, are making a specialty of high-grade oil tempered valve springs for gasoline motors, in addition to their regular line of springs for various purposes.

The Belle Isle Motor Company, Detroit, Michigan, has been reorganized under the name of the New Belle Isle Motor Company, E. W. Gregory, a well known business man of Detroit, is president, and W. D. Waugh is treasurer of the new company.

G-L Economizer Company, New York City, have moved to new offices in the Thoroughfare Building, 1777 Broadway.

Indian Refining Company, Inc., Cincinnati, Ohio, have opened a supply station on Gardiner's Bay, Long Island, where yachts may obtain gasoline, oil, coal and water in any quantity and at reasonable prices. Fresh water will be supplied without charge.

Carlyle Johnson Machine Company have moved from Hartford to Manchester, Connecticut, where they are occupying a new factory building with three acres of land and direct railroad connection. The new main building is 200 by 40 feet, with an annex and boiler room, 136 by 40 feet, warehouse 130 by 40 feet, and office building 32 by 32 feet. The factory is up-to-date in every respect, including sprinkler system and watchman's time detector. Power is furnished by a 60 h.p. Atlas Engine which also drives a dynamo for electric lighting. (See cut on next page.)

Vim Motor Mfg. Company, Sandusky, Ohio, have installed a 35 h.p. Vim motor of the racing type in the speed boat Vim II, which was recently launched upon Sandusky Bay. The boat is 26 feet long and 4 feet beam with a transom stern and flaring bow and is planked with 3/4-inch white cedar. The motor is equipped with an auxiliary carbureter, rear control of timer and throttle and a rear starting device. It is expected that the boat will make a speed of from 23 to 25 miles an hour.

E. M. White & Company, Old Town, Maine, are makers of canvas-covered canoes, with or without motors, canvas-covered speed boats, spray hoods, etc. The White motor canoe, which is illustrated on the next page, is so stiff that three men can stand upon the coaming without overturning the boat. There is a sponson air chamber extending the full length of the boat upon both sides, which gives additional buoyancy. A speed of 9 miles an hour is obtained with a 2 H.P. motor and of 12 miles with 4 H.P.

Mianus Motor Works, Mianus, Conn.— During the past year the business of this company has increased to such an extent that at a recent meeting of the Board of Directors it was decided to increase the capacity of the plant 50 per cent. by the installation of additional machinery and the building of a new power house. The Providence branch house has been moved from 139 Richmond street to 142 and 144 Dorrance street, in order to obtain larger quarters.

Hunter & Ingersoll, St. Michael, Alaska, write that there is a good opportunity for the sale of gasoline motors for use on the Yukon River at that point and they desire to correspond with makers of gasoline motors with the view to taking an agency.

National Association of Boat and Engine Manufacturers.—The executive committee has adopted a resolution relating to challenges for the trophies for motor boats. The resolution reads: "That all challenges for the respective trophies be received and accepted up to within ten days of the first advertised date of races for said trophies." These trophies are the world's international championship for boats of 12 meters, national championship for boats over 40 feet (high speed), interstate championship for boats 33 feet and under (high speed), cabin launch championship for boats over 40 and under 60 feet, and the motor boat championship for boats 60 feet and over.

Nilson Yacht Building Company, Baltimore, Md.—The plant of this company was destroyed by fire on July 19, together with five yachts, causing a loss estimated at $35,000 and said to be covered by insurance.

F. M. Miller, formerly with the boat building department of the Lozier Motor Company, is now with the Traverse City Motor Boat Company, Traverse City Mich.

Light Ship Photographs Copyrighted.— Owing to an oversight we failed to state beneath the photographs of the light ships along the Marblehead course, on page 15 of our July issue, that they were furnished by N. L. Stebbins of Boston, Mass., are copyrighted by him and are used by him in *Stebbins' Coast Pilot.*

Sales and Charters.

ALFREDINE III—45 foot Speedway motor boat, sold by R. E. Slaven to Dean Alvord, who has renamed her Centipede.—(Gas Engine & Power Co. and Charles L. Seabury & Co. Cons.)

ANNONA—26 foot motor catboat, 8 h.p., sold by George N. Jacobs, Cotuit, Mass., to T. E. Gatey, New York.—(Henry J. Gielow.)

BEATRICE—36 foot launch, sold by estate of E. R. Reynolds to S. A. Migent.—(Gas Engine & Power Co. and Charles L. Seabury & Co. Cons.)

BUCCANEER—26 foot motor sloop, sold by President A. Lawrence Lowell, of Harvard College, to F. R. Wright, of Campbello, Mass.—(Hollis Burgess Yacht Agency.)

BULL DOG—Raised deck cruiser, sold by E. B. Curtis to A. H. French, Buffalo, N. Y.—(Cox & Stevens.)

DANOOSH—Launch, sold by J. D. Acker to H. Beck, and renamed Henrietta B.—(Gas Engine & Power Co. and Charles L. Seabury & Co. Cons.)

EAGLE—65 foot motor boat, 40 h.p., sold by J. S. Mundy to United States Life Saving Service for use at Pamlico Sound Station.—(Henry J. Gielow.)

EMILY—30 foot motor boat, sold by David P. Page, Boston, Mass., to Dr. Robert T. Moffatt, Boston, Mass.—(B. B. Crowninshield.)

ERONEL—36 foot raised deck cruiser, 10 h.p., sold by Samuel Cochrane to S. H. Gillespie.—(Henry J. Gielow.)

FAIRBANKS B.—Racing launch, sold by A. Fabbri, Bar Harbor, Me., to W. McCrillis Sawyer.

FALCON—35 foot launch, 14 h.p., sold by C. Neal Burnell, of Boston, Mass., to Robert C. Weed, of Providence, R. I.—(Hollis-Burgess Yacht Agency.)

FLANEUR—50 foot motor yawl, 10 h.p., chartered by Clifford E. Dunn to Stephen P. Sturgis.—(Henry J. Gielow.)

IDLER—46 foot launch, sold by W. M. Chesebrough to C. Phillips.—(Gas Engine & Power Co. and Charles L. Seabury & Co. Cons.)

IGNITA—55 foot fast motor cruiser, 70 h.p., sold by Lindsay Russell, receiver for Ennis & Stoppani, New York, to George H. Stetson.—(Henry J. Gielow.)

IXION—35 foot motor boat, sold by J. K. Lanning, Boston, Mass., to Cooper Howell, Philadelphia, Pa.—(B. B. Crowninshield.)

KATHERINA—50 foot motor yawl, 12 h.p., sold by A. Homer Skinner to J. W. Hornor.—(Henry J. Gielow.)

KATHLEEN—36 foot motor yawl, 8 h.p., sold by R. S. Pike, Toronto, Can., to Chas. F. Brenner, Dayton, O.—(Henry J. Gielow.)

KETCHIKAN II—45 foot motor boat, sold by Edward Kemp to A. L. Judson and renamed Whippo'will.—(Gas Engine & Power Co. and Charles L. Seabury & Co. Cons.)

LA VEDETTE—Gasoline cruiser, sold by Greenport Basin & Construction Co. to Frank A. Egan, New York.—(Stanley M. Seaman.)

MAHDEENA—28 foot motor yawl, chartered by A. C. Needham, Manchester, Mass., to J. Dickinson Este, of Philadelphia, Pa.—(Hollis-Burgess Yacht Agency.)

MARGE—Hunting cabin launch, chartered by H. B. Stokes, New York City, to E. F. Albee, New York City.—(Cox & Stevens.)

MELUSINA—35 foot motor cutter, sold by E. A. Doyle, Lynn, Mass., to John J. Martin, Boston, Mass., and renamed Black Duck.—(Hollis-Burgess Yacht Agency.)

MILICETE—58 foot motor sloop yacht, 16 h.p., chartered by T. D. Poucher to W. H. White.—(Henry J. Gielow.)

NAUTILUS—65 foot gasoline launch, chartered by Marcellus Coggan, Boston, Mass., to the Boston Yacht Club, Boston, Mass.—(Hollis-Burgess Yacht Agency.)

PIM—22 foot motor catboat, 3 h.p., sold by J. F. Bensel to G. W. Jaynes.—(Henry J. Gielow.)

RELIABLE—Hunting cabin launch, sold by Robert W. Emmons, 2d, New York City, to Henry T. Sloane, Isleboro, Me.—(Tams, Lemoine & Crane.)

SHUR—Gasoline cruiser, sold by D. Y. Pendas, New York, to George Lane, Poughkeepsie, New York.—(Stanley M. Seaman.)

TAMBOUR—Cruising launch, sold by F. P. Sheehy, New York City, to Irving J. Rhodes, Waterford, N. Y.—(Stanley M. Seaman.)

TED—Cruising launch, chartered by F. B. Van Doorn, New York Athletic Club, to J. H. Brookfield, New York Yacht Club.—(Stanley M. Seaman.)

THAIS—Motor boat, sold by W. H. Burgess, Oyster Bay, N. Y., to Mr. Carter, Norfolk, Va.—(Cox & Stevens.)

THEMIS—40 foot motor yawl, chartered by Dr. Charles Wuest to A. J. Maury, Philadelphia, Pa.—(Cox & Stevens.)

YANKIANA—Motor sloop, chartered by Howell Hansel, Boston, Mass., to Phillip Chase, Milton, Mass.—(Hollis-Burgess Yacht Agency.)

Vim II, recently launched at Sandusky. See paragraph.

Campana, a 30-footer with 6 h. p. Holliday motor, of St. Heliers Bay, Aukland, N. Z.

(Sales and Charters, Concluded.)

HARRIETT—38 foot cabin launch, 10 h.p., sold by C. R. Mulford, Trenton, N. J., to E. C. Cochran, Memphis, Tenn.—(Henry J. Gielow.)

HELYS—65 foot motor yacht, 35 h.p., sold by Richard H. Gillespie, Stamford, Conn., to C. L. Mulford and others, New York City.

KATYDID—32 foot speed launch, 30 h.p., sold by Gus A. Diem, New York City, to Charles S. Rees, Alexandria Bay, N. Y.

VEGA—70 foot motor yacht, 60 h.p., chartered by Morgan Barney, New Bedford, Mass., to J. C. Brady, Seabright, N. J.

The Month's New Incorporations.

Motor Boat Club of Saranac Lake, Saranac Lake, N. Y. No capital stock. Directors: J. A. Burchard, S. C. Blauvelt, John Harding, Frank Musselman, S. J. Appleyard, B. H. Gray and H. P. Cook, of Saranac Lake.

Branford Yacht Club Corporation, Branford, Conn. No capital stock. Incorporators: Herbert Smith, of East Haven; Norman Gillette, of South Beach, and Homer H. Shepard, of New Haven.

Portage Pleasure Boat Association, Portage, Wis. Capital $1,500. Incorporators: A. J. Klenert, J. C. Lusch, P. J. Lennon.

New York Motor Boat Company, City Island, N. Y. Capital $10,000. Incorporators: W. F. Wahrenberger, Margaret Noonan and Elizabeth Caron, City Island, N. Y. To manufacture boats, motor engines, etc.

The Gillis-Strickland Motor Co., Rochester, N. Y. Capital $25,000. Incorporators: J. W. Gillis, S. M. Havens, R. H. Strickland. To manufacture automobiles, motor cars, boats, etc.

Waterhouse Carbureter Co., Boston, Mass. Capital $100,000. Incorporators: H. D. Waterhouse, Frederick C. Hersee. To manufacture and deal in motor supplies.

Standard Sporting Goods & Motor Goods Co., New York City, N. Y. Capital $25,000. Incorporators: J. Hirschman, O. W. Freidenrich, A. Hirschman.

North American Motor Corporation, Stapleton, S. I. Capital $10,000. Incorporators: Chauncey Cleveland, H. Bernard Layman, Priscilla Wallace. To manufacture motors, vehicles, boats and motor cycles.

Trade Literature Received.

Gray Motor Company, Detroit, Michigan.—Catalog of Gray two-cycle motors, also instruction book containing detailed instructions for the installation and operation of Gray motors, with wiring diagrams, etc.

Hunter-Wockler Boat Company, McHenry, Ill.—Booklet descriptive of "Hunter Quality" launches, knockdown frames and boat patterns, boat houses, etc.

New York & New Jersey Lubricant Co., 165 Broadway, N. Y. City.—"The Cylinder Oil with a Pedigree." A booklet treating of the requirements necessary in cylinder oils and showing how these are met by "Motoreol."

Truscott Boat & Auto Supply Co., St. Joseph, Mich.—Catalog number 11 recently issued by this company is a book of over 200 pages describing all supplies and accessories for motor boats, motor cars and motor cycles.

Mianus Motor Works, Mianus, Conn.—"Marine Gasoline Motors." Booklet descriptive of Mianus two-cycle motors for 1909, with details of construction, equipment, prices, etc.

Breed & DeBlois, 1876 Broadway, New York City.—Catalog descriptive of the "Modernized" four-cycle multiple cylinder marine motors for 1909, their construction, equipment, prices, etc.

Hall Gas Engine Co., Bridesburg, Philadelphia, Pa.—Catalog of Hall four-cycle, make-and-break marine motors, 6 to 75 H.P.

Hall Gas Engine Mfg. Company, Waukegan, Ill.—Catalog of Hall horizontal opposed, four-cycle marine motors, two and four cylinders, 2 to 50 H.P., supplies, etc.

Cooley Mfg. Company, Waterbury, Vt.—Catalog of Cooley two-cycle make-and-break marine motors. Also circular of the Cooley spray hoods.

A. G. Cuthbert, 1750 N. Rockwell St., Chicago, Ill.—Circular containing photographic illustrations of various types of Cuthbert built boats, also letters and references of boat owners.

Monitor Boat & Engine Co., Newark, N. J.—Catalog of "Monitor" knock-down frames, 16 to 40 feet.

Trenton Engine Company, Trenton, N. J.—"Please Compare," booklet describing the Reeves-Graef heavy-duty, four-cycle marine engines, two to four cylinders, 15 to 30 H.P.

The White motor canoe.—A demonstration of stiffness.

(See paragraph, previous page.)

Phillips Gasoline Engine & Motor Co., Chicago, Ill.—Catalog of the Phillips duplex and quadruplex horizontal opposed marine motors, accessories, knock-down frames, hulls, etc.

Wolverine Motor Works, Bridgeport, Conn.—Catalog of "Wolverine" four-cycle gasoline-kerosene marine motors, one to three cylinders, 5 to 100 H.P.

Holliday Engineering Co., 160 Bunker St., Chicago, Ill.—Catalog of Holliday four-cycle marine motors, one, two and four cylinders, 2½ to 40 H.P., also the Holliday reverse gear.

Henry L. F. Trebert, Rochester, N. Y.—"Perfection." Booklet describing the H. L. F. T. four-cycle marine motors, built in two, four and six-cylinder models.

Muscatine Motor Company, Muscatine, Ia.—"Tale of the Planet." Booklet describing Planet two-cycle motors, one to four cylinders, 3 to 32 H.P.

Loew Mfg. Company, Cleveland, Ohio.—Circular describing the Loew four-cycle, four-cylinder, 25 H.P. marine motor.

Watertown Motor Company, Watertown, N. Y.—Catalog of "Watertown" two-cycle marine motors, 3 to 75 H.P., one to six cylinders.

Regal Gasoline Engine Company, Coldwater, Mich.—Catalog of "Regal" four-cycle marine motors, one, two and four cylinders, 3 to 24 H.P., high-speed, 5 to 45 H.P. heavy-duty type.

E. J. Willis Company, 8 Park Place, New York City.—Catalog of motor boat supplies with illustrations, and list and net cash prices.

New Belle Isle Motor Company, Detroit, Michigan.—Catalog of "Belle Isle" two-cycle motors, one and two cylinders, 2 to 10 H.P.

Empire Battery Company, 123 W. 68th St., New York City.—Folder descriptive of "Empire non-sulphating" storage battery, 6 volts, 60 and 80 ampere-hours capacity.

Lackawanna Mfg. Company, Newburg, N. Y.—Catalog of "Lackawanna" two-cycle marine motors, one to six cylinders, 2½ to 55 H.P. Also illustrated price list of parts, fittings, etc.

Witherbee Igniter Co., 1876 Broadway, New York City.—Catalog of the Witherbee storage battery, Volta high-tension magneto, "Wico" spark coils, plugs, timers, switches, etc.

A. S. Morss Co., 222 Commercial St., Boston, Mass.—Catalog of marine hardware in a handy pocket size, 5½x4 inches, containing 444 pages.

Orswell Igniter Co., 192 Commercial St., Boston, Mass.—Booklet describing the Orswell system of jump spark ignition, in which the spark plug and induction coil are combined and there is no high-tension wiring.

The Month's Patents.

ISSUED JUNE 15, 1909.

924,673. **Carbureter.** James B. Knickerbocker, Indianapolis, Ind. Filed Nov. 21, 1907.

925,239. **Spark-Plug.** Fred W. Smith, Aberdeen, S. D. Filed June 22, 1908.

ISSUED JUNE 22, 1909.

925,649. **Timer.** Fred A. Putnam, Melrose, Mass., assignor to Sewing Machine Supplied Company, Boston, Mass., a Corporation of Massachusetts. Filed Sept. 18, 1908.

925,742. **Electro-magnetic Igniter.** Charles S. Beardsley, Cleveland, O. Filed Aug. 7, 1908.

925,766. **Internal-Combustion Motor.** Leander E. Fish, Los Angeles, Calif. Filed Feb. 21, 1908.

925,793. **Internal-Combustion Motor.** Charles H. Atkins, Springfield, Mass. Filed June 7, 1905.

925,973. **Carbureter.** Alexander Winton and Harold B. Anderson, Cleveland, Ohio, assignors to The Winton Motor Carriage Co., Cleveland, O. Filed Apr. 9, 1907.

926,060. **Multiple-Contact Timer.** Edwin S. Lincoln, Brookline, Mass., assignor to Electric Goods Manufacturing Co., Boston, Mass., a Corporation of Maine. Filed May 5, 1908.

ISSUED JUNE 29, 1909.

926,252. **Sheet-Metal Boat.** George H. Hyde, Watertown, N. Y. Filed Feb. 13, 1909. Serial No. 477,701.

926,284. **Electrical Apparatus for Producing Sound-Signals.** Charles H. O'Brien, Augusta, Me. Filed Dec. 11, 1905.

926,330. **Electric Ignition Device.** Theodore Hubert, New York, N. Y., assignor to Charles F. Splitdorf, New York, N. Y. Filed Apr. 4, 1906.

926,368. **Magneto-Electric Machine.** Ernst Troike, Sandusky, Ohio, assignor of one-fourth to Paul Troike, Sandusky, O. Filed Nov. 30, 1908.

926,439. **Carbureter.** Alexander Winton and Harold B. Anderson, Cleveland, O., assignors to The Winton Motor Carriage Co., Cleveland, O. Filed Mar. 9, 1907.

926,508. **Carbureter.** William L. Perry, Scranton, Pa. Filed Dec. 27, 1907.

926,651. **Internal Combustion Motor.** Howard Greer, Jr., Chicago, Ill. Filed June 13, 1904.

ISSUED JULY 6, 1909.

927,001. **Internal Combustion Motor.** Frank L. Nichols, Stamford, Conn., assignor to Nicholas Quadruple Traction Vehicle and Power Co., Mount Vernon, N. Y., a Corporation of New York. Filed Feb. 2, 1907.

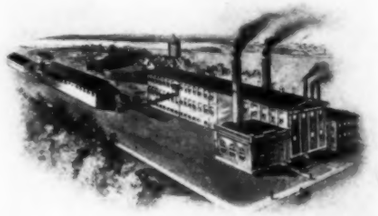
927,004. **Internal Combustion Motor.** Ludwig Pettersson, Chicago, Ill. Filed Apr. 14, 1906.

927,087. **Universal Joint.** Herbert Vanderbeek, Hartford, Conn. Filed Apr. 29, 1908.

927,223. **Internal Combustion Motor.** Ernest W. Graef, New York, N. Y., assignor to Elizabeth J. Graef, Brooklyn, N. Y. Filed Nov. 13, 1905.

927,255. **Sparking Plug** Abbot A. Low, Horseshoe, N. Y. Filed Feb. 29, 1909.

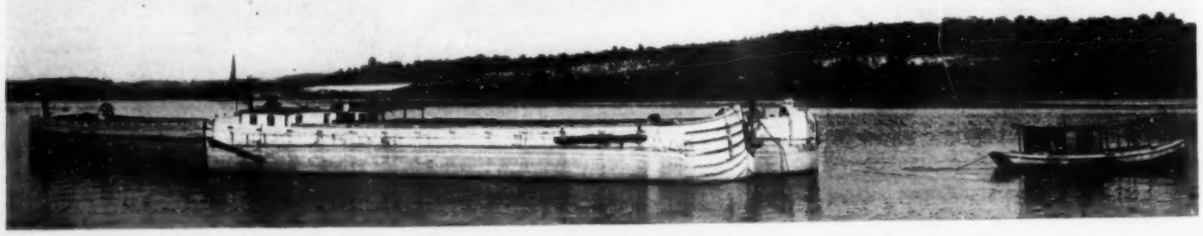
927,297. **Motor.** Charles Tuckfield, East Molesey, England. Filed Feb. 24, 1908.



The new plant of Carlyle Johnson Machine Company at Hartford, Conn.

(See paragraph, page 51.)

Capt. Philip R. Elsworth, a famous yacht designer in his day, died at his home in Bayonne, N. J., on July 9, aged 81 years. Beginning with the schooner Comet in 1874, Capt. Elsworth produced a fleet of yachts whose mere names are full of meaning to all old yachtsmen, including Comet, Elephant, Fanita, Kangaroo, Montauk, Grayling, Sasqua, Gleam, Crocodile, Wizard, Arab, Gertrude, Penquin, Tigress, Atlantic, Anaconda, Eurybia and the steam yachts Cora and Fedalma.



Motor Tug Ti Pulp of Ticonderoga, N. Y., equipped with a single-cylinder, 10 h.p. Cooley motor, towing three canal boats.

New Motor Boat Owners.

California

SACRAMENTO—Becknell Brothers, E. M. Brown.
SAN DIEGO—Thomas Hammond.
STOCKTON—Theo. Stephens.

Canada

BROCKVILLE, ONT.—Charles W. McLean.
MURRAY BAY, QUEBEC—Alfred Jarvis.

Connecticut

BRIDGEPORT—James English.
EAST HAMPTON — N. N. Hill, Cooper Barton.
GLASTONBURY—John H. Hamill.
MILFORD—Loren Wilcox.
NEW LONDON—C. Henry Schwaner, Jr.
NORWALK—Thomas Sterling.
SOUTH NORWALK — Arthur S. Hoyt.

Delaware

DOVER—H. A. Richardson.
WILMINGTON—E. P. Tucker, W. R. Buckmaster.

District of Columbia

WASHINGTON—A. Mullins.

Florida

COCOA—T. G. Ronald.

Illinois

CAIRO—Edward Schatz, F. L. Harp.
DANVILLE—Earl Reid, Ray Allen.
DECATUR — Abraham Arnott, L. Camp.
JOLIET—Donald Goss.
LINCOLN—Will Ritter.
MOLINE—Chester Burns.
MURPHYSBORO—Claude Hensen.
PEORIA—Fred Fueger, Frank Corning.
ROCK FALLS—Henry Johnson.
STERLING—John S. Miller.

Indiana

EVANSVILLE—H. Mann.
GOSHEN — Anthony Deahl, Ray Deahl.
LAFAYETTE—Alva Reser.
MISHAWAKA—E. G. Elberhart.

Louisiana

NEW ORLEANS—Samuel Zemurray.

Maine

BANGOR—Edgar E. Scott, W. McCrillis Sawyer.
BAR HARBOR—Robert W. Martin.
BIDDEFORD—C. F. Greely.
BINGHAM—H. P. Craig.
BOOTHBAY—C. J. Marr.
BREWER—W. E. Edwards.
CALAIS—Miss Millie Bartley.
CAMDEN—Captain H. D. Husby.
DEXTER—Arthur Small.
EASTPORT—A. Wilbur.
GARDINER—W. D. Harrington.
KINEO—Dr. S. McCuen Smith.
WOODLAND—William Lawyer.
KITTERY POINT—Chester Norton.
MILBRIDGE—D. G. Fields.
LINCOLNVILLE—J. H. Gilberte.
NORTH BERWICK—W. F. Neal, W. H. Derby.
PORTLAND—George D. Thorndike, James W. Parker, Benjamin Thompson.
PHIPPSBURG—Freeman H. Merritt, Peter Peterson.
SEAL HARBOR—Daniel Hanna.
SKOWHEGAN—Dr. Norcross.
SOUTH PORTLAND—Ilion Willard.

Maryland

BALTIMORE — Howard Durm, George Danner, Wm. T. Stansbury (1828 E. Pratt St.).

Michigah

CARP LAKE—George Raff.
GRAND RAPIDS—George Crammond.
GREENVILLE—H. L. Baker.
MARQUETTE—William Croze, J. M. Todd.
PETOSKEY—Frank Bond.
TOPINABEE—E. P. Cooley.
TRAVERSE CITY—A. C. Williams, Will Darrow, H. Kneeland, Glen Power, Irving C. Murray.
WEQUETONSING—H. D. Sexton, J. H. Studman.

Minnesota

DULUTH—Charles Salter, Hugo Jacoby, Ernest Larsen, Ray St. Germain, Richard Schell.
EAST GRAND FORKS — Fred Craig.
MADISON LAKE—M. D. Francher.
WALKER—Walter McDonald.
WEST DULUTH—Emmet Larson.

Mississippi

GULFPORT—S. M. Graham.

Missouri

KANSAS CITY—W. Nutting.
ST. LOUIS—Edwin Koening, August Kron.

Massachusetts

ATHOL—Joseph Wilcox.
ATTLEBORO—William Mead, Albert Clapp.
BEVERLY—Charles E. Grush.
BOSTON—E. E. Eaton, Carleton Reed.
BRIGHTON—G. E. Wyre.
BROCKTON—George A. Cole.
Cambridge—Miss M. A. Leavitt, 33 Garden St.
CLINTON—Wm. A. Fuller.
EAST BRAINTREE—Louis Moody.
EVERETT—Charles Clement.
ESSEX—Leighton E. Perkins.
HAVERHILL—A. L. Littlefield, E. W. Longfellow, William Holland, Belmont Perkins, G. Willard Martin, David Gee.
JAMAICA PLAIN—Put Ware.
LAWRENCE—Thomas J. Frost.
LOWELL—Thomas B. Rafter, Edward T. Gilman.
MANOMET—W. H. Pridham (Hotel Idlewilde).
MARBLEHEAD—J. L. Damon, N. R. Blaney.
MELROSE—R. H. Curry.
MILFORD—P. H. Powers.
NANTASKET—John L. Dile, F. C. Stowell.
NANTUCKET—Charles M. Irving, William Barnes.
NEW BEDFORD—Joe O'Connell, Dr. Pease, E. M. Slocum, Edwin F. Snow, George R. Wood.
NONQUITT—Henry F. Noyes.
NORTH EASTON—Charles H. Andrews.
ONSET—O. M. Baker.
ROCKLAND—William M. Hurley.
SALISBURY—E. W. Deal.
SPRINGFIELD—S. B. Call.
TAUNTON—Harold Hathaway, John Wood (East Water Street), Joseph Williams, Gove Bros. (Wales St.).
SCITUATE—C. H. Tilden, C. C. Shackford.
WAREHAM—E. C. Howard.

New Hampshire

CHARLESTOWN—F. L. Watkins.
ENFIELD—E. A. Wells.
GREENLAND—Chester Norton.
GREENVILLE—S. P. White, J. L. Sherman.
WARREN—Howard Safford.

New Jersey

BAYONNE—John Ryan (West 30th St.).
CAMDEN—Freas Brothers.
NEWARK—Addison Wiley, Thomas A. Hine, Edward Snyder, S. W. Decker, William S. Rausch, Adolph Patizer, John Coburn.
HACKENSACK—Charles Vermorel.
OCEAN CITY—W. D. Snow, Edward E. Brown, Otis Townsend, Frank Leggett.
RED BANK—W. L. Dudley.
SEA ISLE CITY—Fred Cronecker.
TUCKAHOE—Lylburn Hess.

North Dakota

DEVIL'S LAKE—John Barnhardt.

New York

ALBANY—Arthur J. Smith, John B. Linderman.
BROOKLYN—Thomas A. Baird (764 Classon Ave.), William McNamee (782 Classon Ave.).
CORONA—Frank Andrews.
DOLGEVILLE—E. D. Moaher, Fred E. Smith.
EAST ROCKAWAY—M. J. Levy.
ELMIRA—Jesse Peck.
GENEVA—T. S. Tower.
GLOVERSVILLE—Howard Warner, Charles Abbott, Ben Eaton, Bert Martin, Ed. Schermerhorn.
KINGSTON—A. Freeman.
LA SALLE—John Hollinger.
MASSENA—Dodge & Smith Co.
MAMARONECK — Lester Nichols (Beach Ave.).
NEW BRIGHTON—Theodore Gogoll.
NEW YORK CITY—Richard Croker, Jr., Edward W. Haven (care Curtis Pub. Co.), R. A. Holmes (830 Broadway).
ONEIDA—Fred Dennison.
NORTH TONAWANDA — Arthur Schoelkopf.
PATCHOGUE—Joseph J. Dowling.
PEEKSKILL—Lester Covert, George Walker.
PENN YAN—Henry Sutherland, Clarence Spencer.
PORTCHESTER — Fred Kroner, (Mead Ave.).
WATERVLIET—Harry M. Steele, Samuel M. Kennedy.
WAYLAND—Dug Lerch.

Ohio

CLEVELAND—Howard Young.
COLUMBUS—George Wolff, Allen F. Koch, W. H. Klunk.
TOLEDO—George Winebichler.

Oregon

WOODLAND—R. W. Mills.

Pennsylvania

CHESTER — Allen Hendrickson (Front and Flower Sts.).

Rhode Island

CAROLINA—Howell Tucker.
NEWPORT—J. S. Kahler, William Buffum, Philip Caswell, William P. Browley, Simon Hart, John S. Scannevin.
PAWTUCKET—Edward Hines.
PROVIDENCE—Charles H. Merriman, Jr., M. L. Goff, W. Wallace.

Tennessee

MEMPHIS—E. B. Thompson.

Texas

VICTORIA—Louis F. Haller.

Vermont

MONKTON—William H. Hall.
MONTPELIER—E. B. Gilbert.
QUEEN CITY PARK—Ralph Putnam.
ST. ALBANS—J. A. Warner, F. O. Jackson.
WEST MILTON—John Granger.

West Virginia

WHEELING — Richard Donovan, Charles Wurtzbecker, Clarence Northwood, Charles Nevergold, Henry Horkheimer.

Wisconsin

CALVARY—Peter Rieder.

Washington

BIRCH BAY—Henry Adams.
BALLARD—John Thornton.
BELLINGHAM—D. O. McDonald, Andrew Matson, Frank Berry, Zig Arnzen, J. W. Richardson, R. H. Stevens, G. C. Barker, S. Bogen.
LOWELL—C. C. Heater.
SEATTLE—Ted Geary, O. B. Williams, Edward Roesch, James Park, J. F. Smith, E. J. Mayo, W. A. Hillis, W. L. Pigott, S. M. Shipley, W. R. Sellers, J. J. Date, William H. Harris.
STANWOOD—C. J. Cable.

Tendencies in Marine Motor Construction.

(*Continued from page 45.*)

been brought to such a high degree of efficiency that it is no longer necessary to use batteries in starting it, as magneto makers nowadays guarantee their machine to give a spark at a low speed and the writer can vouch for some makes which he has had the privilege of testing. Of course accidents are liable to happen, and as a precaution the dual system of ignition is used which consists of a magneto and battery wired to a double throw switch which is used to throw on or off either the battery or magneto.

A central jet float feed carbureter is still in vogue, and some makers warm the air passage by water jacketing it and passing some of the outlet water through the jacket. One maker allows the portion of the exhaust gas to pass around through the jacket of the carbureter thus producing the same effect as the hot water. Nothing radical has taken place in carbureter design recently, although there is every reason to believe that as soon as engineers have settled the question of ignition and magneto design they will start on the carbureter and will accomplish some startling results.

In view of the high price of gasoline and the comparatively low price of kerosene abroad, the demand for an American motor which will successfully burn kerosene or crude oil has been very great, and many gasoline engine builders of this country are converting their motors into kerosene engines by getting out a so-called kerosene vaporizer which is attached to the regular engine. Some of these devices work very well and some do not. One or two American engine builders inject the fuel at the cylinder head under pressure, a feature which seems to be a step in the right direction. It is an acknowledged fact that if we desire to get the foreign trade we must do more thinking and more experimenting in this direction.

Among the Clubs.

(*Continued from page 50.*)

Burlington Launch Club, Burlington, Iowa.—The Launch Club is making plans for the motor boat race early in August, which is expected to be the biggest event of the year in the Middle West. A prize of $1,000 has been put up for a 50-mile race, to be run under the new rules of the Mississippi Valley Power Boat Association. Lamb IV, the new champion of the M. V. P. B. A., owned by Fred King, of Clinton, Ia., will enter, and will probably be faced by three other speedy boats, with engines of 150 to 200 h. p., Minnie C. III of Fort Madison, Red Top II of Bellevue, and Independence II of St. Louis, besides a large field of other boats.

* * *

Frontenac Yacht Club, Frontenac, N. Y.—The Frontenac Yacht Club on July 12 elected the following officers for the coming year: Commodore, Charles G. Emery; vice-commodore, Walter Jerome Greene; rear commodore, J. W. Friend; secretary and treasurer, Robert J. Reddy. Directors: for one year, Clarence N. Peacock; for two years, D. E. Garrison; for three years, Alfred Costello, J. W. Friend, Walter Jerome Green, Ira A. Kip, Jr., and C. G. Trussel. Races, both handicap and free-for-all, will be held on August 13, 14 and 24.

* * *

Bayou St. John Boat Owners' Association, New Orleans, La.—This association was organized a year ago to establish the free navigation of Bayou St. John, but will now organize as a motor boat club, and build a club house. Hiddleston Kenner and J. Bart Davis, officers of the association, are working on the new plan. A safe and convenient harbor for motor boats will be provided.

The Prize Contest in Questions and Answers.

(*Continued from page 34.*)

the rules of the road are to be observed and in passing another boat the proper signals must be given and answered, failure to do so or mistakes or improper signals disqualifying the offender. No handicapping is necessary as no one is to know where the return gun is to be fixed, and the fastest boat may be at stake boat number 3 or still searching for her number. If a large entry it will give good practice for the rules of the road. Picking up the planks will give good practice in getting off in a tender quickly. The start will prove out the easy starting engines and the finish will test the reversing mechanism carried, also the ability of the man at the wheel to back a boat where he wants to go, and if entered into with the proper spirit this contest will create a lot of fun for both contestants and spectators.

Finally I believe it will be a decided novelty, at least I have never heard of anything of the kind. F. A. BABCOCK.

Speed test for Boat and Crew.

I SUGGEST a race for either family launches, racers, or cruisers. A race from the club house or other point to a distant dock and return under following conditions: Two contestants at a time, evenly matched, based on previous performances; each to carry an observer (official) and make the dock, stop engine, tie up, disembark entire crew, go aboard, start engine, cast off lines, and race to finishing lines, observing the rules of the road throughout the race. Have points for speed, points for making the dock, and the points for making the dock without ramming it larger than for speed so contestants would not take chances of damaging boats in order to be over the finishing line first. If the dock is in a river, it will necessitate good judgment to get the benefit of right side of dock to make the landing, current considered. The winners of the pairs to run off until a victor is reached by elimination. For cruisers instead of making a dock, they could race to a marked line, and cast anchor, stop motor, start motor, bring anchor inboard and race to finish line; or they could be required to land crew in a dinghey and return crew, or to land a certain number of the crew, with the racers of delicate construction, either the dock test or anchorage would be impracticable. Crossing a line, stopping the engine, changing spark plugs, and getting under way and finishing would be exciting enough.

J. WALTER SCOTT, Detroit, Mich.

Smugglers vs. Customs Inspectors.

SELECT six men owning motor boats of about the same speed. Then by lot, choose three men to be smugglers, the rest being customs inspectors. The club house pier will be the customs inspectors pier and the smugglers will be stationed in some boat house near. Decide upon some island or boat house about two miles away which the same smugglers have to reach without the customs inspectors throwing a coil rope on or into the smugglers' boat. The smugglers leave one by one with one customs inspectors' boat in chase. Another cannot start until the first reaches the place agreed upon or is captured. Three judges will be selected to pronounce whether the customs inspectors or the smugglers are victorious.

PAUL MILLER, Buffalo, N. Y.

Some Causes of Overheating.

Some of the more common causes for the overheating of gasoline motors are: Too little lift to exhaust valve; too small exhaust port; late spark; overfeed of gasoline and back pressure from silencer. Among these perhaps the late spark should have more than passing mention, as it is a real cause of abnormal heat and an equally real cause for loss of power, which might otherwise be enjoyed at no additional cost whatever; it is also a promotor of noisy exhaust; so, taken altogether, unnecessarily late ignition is a bad practice and should be avoided.

By Motor Boat Through Rideau Canal.

(*Continued from page 11.*)

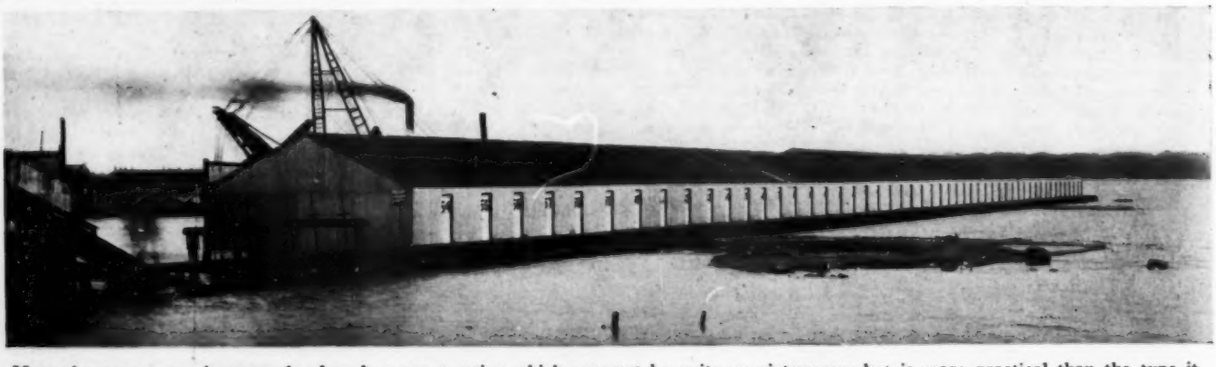
above the Ottawa River, the Parliament Buildings loom up most conspicuously from whatever point they may be viewed.

From the Victoria Tower, which rises to a height of two hundred and twenty feet more, a fascinating view of the surrounding country is obtained. To the north is the graceful sweep of the Laurentian mountains and the Gatineau River which finds an outlet a mile or more east of the city, where it empties into the Ottawa.

Although the Rideau route is so easily accessible from the Thousand Islands region and is traversed every season by so many boats from various parts of the United States, a surprising amount of misapprehension regarding it seems to exist. In the first place the term canal is a misnomer as the route is officially known as the Rideau Navigation and it follows natural water courses—the Cataraqui River, Rideau Lakes and the Rideau River—for practically its entire length, with only such artificial works as are necessary to connect the various bodies of water and to maintain their proper levels. From Kingston to Smith's Falls, there are 14 locks and from Smith's Falls to the Ottawa River there are 33, making 47 in all.

I have seen the statement made that the part of the route from Smith's Falls to Ottawa is entirely through artificial channels, whereas the route follows the bed of the Rideau River nearly the entire distance, and about the only artificial channel is the one running through the city of Ottawa, where it empties its waters into the Ottawa River through the eight locks constructed at the base of Parliament Hill. While it is true that many locks are necessary to overcome the difference in grade of 282½ feet between Smith's Falls and Ottawa, I consider it erroneous to term that portion of the route a canal.

Motor boat garages—The old picturesque shacks along the lake front of Detroit which are being replaced by the modern type shown below.



Motor boat garages—An example of modern construction which may not be quite so picturesque but is more practical than the type it supersedes.

THE GRAY MOTOR CO.

build nothing but two-cycle marine motors

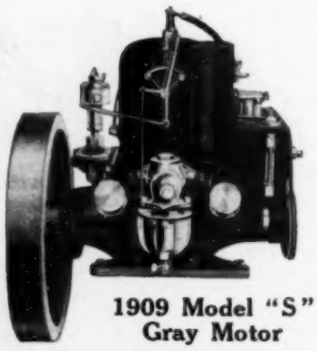
They *concentrate* their entire time, capital, energy and ability on the production of the *best* motor it is possible to build.

The building of Gray Motors is not a side line---nor are they built in one corner of a plant producing some other product.

They have the *largest and most up-to-date plant in the world* devoted exclusively to the manufacture of two-cycle marine motors. When you buy a Gray Motor you get the benefit of all this *concentration* of thought, capital and energy.

This modern plant—*built to build Gray Motors*—an actual photograph without retouching or faking and not a mere picture—is equipped with the most modern and up-to-date tools, machinery and equipment it is possible to buy—*purchased and used to build Gray Motors and nothing else.*

Write and let us tell you what this means to you



1909 Model "S" Gray Motor

Made in 3, 4, 6, 8, 10, 12, 18, 20, and 30 h.p. sizes

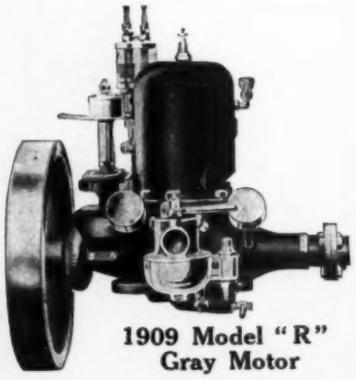
SPECIAL FEATURES:

Force Feed Lubricator
Spark Coil on Cylinder
Carburetor and Commutator Controls on Cylinder
Schebler or Krice Carburetors

OTHER GRAY FEATURES:

Starts without cranking. Long, high grade, interchangeable bearings. All bearings of high grade bearing metal, cylinder, piston, rings, piston pins GROUND. Ball thrust bearings, oil rings on cranks. Counterbalanced cranks. Elevated gear driven commutator. Commutator gears enclosed. Bronze gear driven pump. Bronze bushed pistons.

No Other Motor, high price or low price, includes all these features. Write for big free catalog to-day.



1909 Model "R" Gray Motor

Made in 3, 4, 6, and 10 h.p. sizes.

Not a "left-over" or obsolete type, but a 1909 motor, built in 1909: with all the good features of our 1908 motors, with all the refinements of our 1909 model S, excepting force feed lubricator, spark coil on cylinder and carburetor and commutator controls on cylinder.

Equipped with standard box coil, two feed gravity lubricator, Krice Carburetor—otherwise *same specifications as model S*—just as good, just as powerful, just as fully guaranteed.

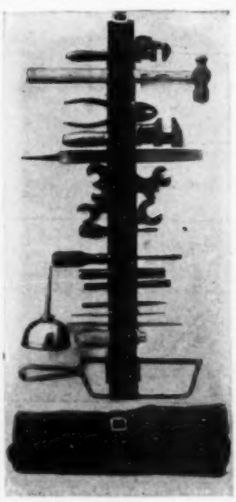
Prices Complete Boat Outfits

3 H. P. $60.00. 4 H. P. $72.00
6 H.P. $89.50 10 H.P. $128.00

Tool Kit for Boat and Auto Owners

$4—A GRAY BARGAIN

18 high-grade tools in a canvas cover. Biggest tool bargain ever offered—for thirty days—$4.00. Buy it today and have the tool **you want when you want it.** A place for every tool—no more lost tools.



8 in. Stillson wrench.
8 oz. machinist's hammer.
6 in. combination pliers.
8 in. monkey wrench.
10 in. flat mill file.
1 double end S wrench for 3-8 and 7-16.
1 double end S wrench for 1-4 and 5-16.
1 double end S wrench for 1-2 and 5-8.
2 in. screw driver.
4 in. screw driver.
5-8 in. cold chisel.
3-8 in. cold chisel.
1 octagon prick punch.
5 in. slim taper file.
6 in. round file.
1 file handle.
1 coppered steel oiler.
8 in. hacksaw.
1 cover.

Write for the Gray Motor Company's catalog of boat and engine accessories.

SPECIAL LOW PRICES for thirty days on following:
Wurkens bilge pump, $2.
Battery Ammeter, $1.75.
Gray Water Strainer, (with removable filter) $1. Worth $5.

The equipment required for launches by the United States Marine laws, is shown in the Gray Boat and Engine Accessory Catalog. Write for copy

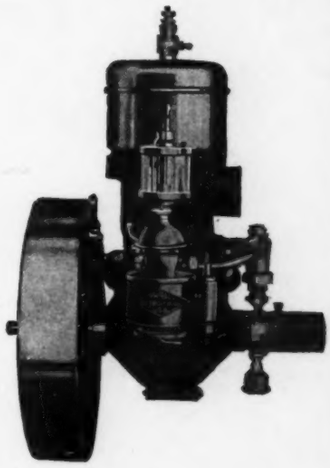
GRAY MOTOR CO. 931 LARNED STREET Detroit, Mich.

Index to Advertisers.

NOW IS THE TIME

TO INSTALL A

"REFINED MOTOR"



IN DINGHY, DORY, ST. LAWRENCE SKIFF, CANOE OR ANY OLD BATTEAU AND BE HAPPY IN HOT WEATHER.

¶ All Refined Motors are equipped with our own design of improved Float feed Carburetor, requiring no readjustment for all speeds when once set. Combines the Ventura Tube, Auxiliary air valve and throttles the mixture after it is made and before it enters the motor; thus adding ***Power*** to any motor with a very economical consumption of gas.

MORE POWER AND 25% LESS GASOLINE CONSUMED

NO ECONOMIZER NECESSARY

"REFINED MOTORS" ARE MANUFACTURED IN SINGLE AND DOUBLE CYLINDERS ONLY. 3 & 6 H. P. AND EQUIPPED WITH REVERSE GEARS WHEN SO ORDERED. WRITE FOR ILLUSTRATED CATALOG.

THRALL MOTOR CO.

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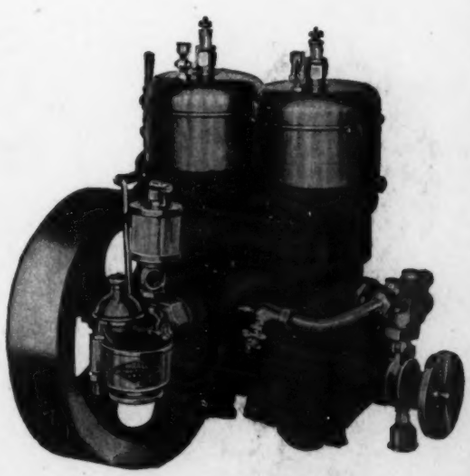
DETROIT, MICH.



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